



UNIVERSITY OF GOTHENBURG  
SCHOOL OF BUSINESS, ECONOMICS AND LAW

THE ROLE OF INFORMATION TECHNOLOGY IN SUPPORTING MANAGEMENT  
CONTROL SYSTEMS FOR CORPORATE SOCIAL RESPONSIBILITY

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## **ABSTRACT**

This licentiate thesis reports the findings from a study to show how information technology (IT) supports management control system (MCS) for implementing a corporate social responsibility (CSR) strategy. The MCS literature points to the potential use of IT to support MCS as a tool for strategy implementation. Thus, this study explores and extends understanding on the role of IT in supporting MCS for implementing a CSR strategy. Using Simons' (1995) levers of control (LoC) framework, I study this association in three large Swedish companies. The findings show that IT plays an important and both direct and indirect role in supporting the MCS process in CSR strategy implementation. The study makes two contributions to the related literature. First, it offers a more detailed understanding on how firms use MCS to manage a CSR strategy. Second, this is the first study that provides insights into how IT supports MCS for CSR strategy.

**Keywords:** Management Control systems (MCS), Levers of Control (LoC), Information Technology systems (IT systems), Corporate Social Responsibility (CSR),

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# 1. INTRODUCTION

Engagement with social and environmental issues has progressively become important in society and increased the expectation on companies to communicate these issues as part of their business agenda. The recent corruption scandals, instances of corporate misconduct, and environmental destruction,<sup>1</sup> which have damaged the reputation and profitability of several large companies<sup>2</sup> have created pressure on corporations to integrate their corporate social responsibility (CSR) initiatives into their business strategy.

The term CSR is typically referred to in a corporation's mission and vision statement and includes a group of social and environmental activities that companies implement voluntarily to integrate the social and environmental influences of their business and their stakeholders' prospects (European Commission 2001). The present study adopts a perspective that views CSR as a critical component of an organization's core business strategy, which includes economic, environmental, and social aspects in order to improve long-term values (Arjaliès & Mundy 2013; Moon 2007).

Previous studies attribute several reasons to the pressure companies face to manage their CSR strategy. First, it is related to stakeholder pressure. Most companies merely care about their shareholders' value and not their stakeholders and/or the social and environmental issues. Such an attitude opposes the basic concept of CSR, which centres around the idea of creating 'shared value' (Gray 2010; Miles et al. 2006; Rangan et al. 2012) and improving their social and environmental performance (Adams and McNicholas 2006; Adams and Carlos 2007; Arjaliès and Mundy 2013). Second, it is related to the pressure that companies face to act transparently. CSR is associated with a company's transparency and demand for transparent information from both internal and external stakeholders (Arjaliès & Mundy 2013; Burnett & Hansen 2008; Perego & Hartmann 2009). Third, it is related to the pressure that companies face to manage their CSR initiatives because they are essential to identify the risks and opportunities associated with their businesses for future survival, and CSR is about corporate legitimacy, opportunity seeking, and risk prevention that can even lead to a competitive advantages (GRI guidelines<sup>3</sup> 2014; Porter & Kramer 2006a; 2006b).

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<sup>1</sup> For example, global warming, depletion of the ozone layer, deforestation and desertification of large areas, diminishing biodiversity, and generating toxic wastes (Henri, 2006; Henri and Journeault, 2010).

<sup>2</sup> Volkswagen's CO<sub>2</sub> emissions scandal, the FIFA corruption charges (Fortune, 2015), and the international bribery scandal in the U.S. oil industry involving a company called KBR (Huffpost 2016).

<sup>3</sup> Global Reporting Initiative (GRI), sustainability reporting guidelines on economic, environmental, and social performance.

Weaving all this together and incorporating CSR as part of the business strategy is complex. Rangan et al. (2012) note that companies have difficulty in managing CSR as an integrated strategy across the organization; nonetheless, they engage in various CSR programmes and initiatives that may lead to the fundamental problem of managing CSR. Furthermore, a domain of management accounting research literature (see e.g. Arjaliès & Mundy 2013; Gond et al. 2012; Henri & Journeault 2010; Henri 2006; Widener 2007) shows that managing the strategic process of CSR activities is a challenge for the management control systems (MCS) of an organization. According to Arjaliès & Mundy (2013), integration of CSR and the mechanisms used to manage it in organizations are often incomplete and unbalanced. They state that there are complexities involved in monitoring CSR strategy indicators, given the large number of suppliers spread globally and the difficulties involved in adapting CSR values into different cultures and backgrounds. The authors point to irregular collaboration between CSR managers, directors, and general management during different phases of CSR strategy integration as a weak point to the operational practices of CSR. Moreover, they stress that part of the problem with CSR integration relates to the difficulty in measuring the future economic benefits associated with CSR strategy and the risk approaches adopted by most companies (e.g. strong focus on legitimacy and reputation). Other problems with integrating CSR refer to the diagnostic processes of CSR strategy that do not have equal priority in companies' business strategy, and the synthesis of long-term aspects of CSR strategy with short-term financial performance.

In order to address issues that are associated with the management of CSR or social and environmental initiatives, companies employ and develop various mechanisms and internal sustainability accounting systems such as 'environmental budgeting', 'sustainability performance measurement', and 'socio-eco-efficiency analysis' (Gond et al. 2012, p.208). Nevertheless, these systems seem to be very specific in terms of the use of MCSs in the context of social and environmental responsibility and have often focused on the improvement of single systems and tools such as eco-control and environmental budgeting to determine the economic and ecological resources (Gond et al. 2012; Henri & Journeault 2010; Henri et al. 2016).

Contrary to the methods and mechanisms mentioned above, Arjaliès & Mundy (2013) propose a combination of both formalized and informal MCSs that may facilitate management control for the CSR strategy. The authors also point to the technical ability to meet the present and future needs of social and environmental issues. Furthermore, Gond et al. (2012) propose that better understanding of the relationships between sustainability control systems (SCS) and

MCSs enables organizations to shift from regular management control to more integrated and dynamic control systems that support the improvement of new business opportunities. The authors state that the integration processes between MCSs and SCSs is a 'socio-technical' process (Gond et al 2012, p.209-210). The socio-technical process consists of three dimensions namely technical, organizational, and cognitive. These dimensions have critical influences on the integration of social and environmental issues in the MCSs of an organization. Gond et al. (2012) argue that when SCSs run parallel to traditional MCSs in practice, the organizational decision-making process becomes restricted in integrating the available environmental and social data of an organization. Therefore, technical integration must involve methods that create the link between SCSs and MCSs. Technical integration refers to the information technology (IT) infrastructure of an organization that potentially links the SCSs and MCSs to support and integrate the information between these two systems.

The literature in the areas of MCS and IT<sup>4</sup> shows that IT and its applications (e.g. computer programmes, mobile applications, enterprise infrastructure software, and cloud systems) have the potential to support the management of strategies and planning processes (see e.g. Bhatt & Grover 2005; Granlund 2007; Liew 2014; Moorthy et al. 2012; Melville & Kraemer 2004; O'Donnell & David 2000; Taipaleenmäki & Ikäheimo 2013). Various scholars have frequently noted that IT has the ability to automate, informate, transformate, and create values in the operation and management of business processes (see e.g. Liew 2014; Pearlson 2001; Pearlson & Saunders 2010; 2004; Quattrone 2016). More specifically, Thambusamy & Salam (2010) state that organizations can use IT strategically to automate, informate, and transformate environmentally sustainable activities such as pollution prevention, product stewardship, and clean technology. These authors emphasise that IT has the potential to automate business processes and reduce the use of resources. In addition, IT supports decision support systems (DSS) by creating easy access to social and environmental data and information and by transforming the way information is communicated (creating value).

Drawing on Gond et al. (2012) and Arjaliès & Mundy (2013) regarding integration of IT infrastructure and MCS for managing CSR issues, the present study intends to not only follow the research work of Arjaliès & Mundy (2013) but also bring the role of IT into this area because 1) both studies, that is, Arjaliès & Mundy (2013) and Gond et al. (2012), have recommended

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<sup>4</sup> The present study refers to the term 'IT/IS' jointly as 'IT' as means a combination of people and actual technical devices, tools, and concepts.

to research the role of integration of IT infrastructure and MCS for CSR strategy implementation forward; 2) the potential ability of IT has been highlighted by several researchers (e.g. Liew 2014; Pearlson 2001; Pearlson & Saunders 2010; 2004; Quattrone 2016). These scholars note that IT has the ability to automate, informate, transformate and create value in the management of business processes by way of facilitating the organizations' supply chain management and communicating with customers and suppliers globally; 3) lack of research and calls for further investigations in these areas (i.e. MCS, CSR, and IT) have been pointed out by several researchers (see e.g. Thambusamy & Salam 2010; Andersen et al. 2011). To advocate this claim referring to Thambusamy & Salam, they state that '*A review of extant Information Systems (IS) literature on environmental sustainability revealed that the strategic role of Information Technology (IT) in enabling environmental sustainability strategy is one perspective that has not been explored in depth*' (2010, p.1). Likewise, Andersen et al. (2011) highlight that future research should concentrate on the relationship between IT and CSR activities in two or three cases and investigate these issues explicitly.

Due to these issues and motivation for further investigations in this area, the present study aims to shed light on the following purpose and research question.

### 1.2. Purpose of the Study and Research Question

The purpose of this study is to explore and extend understanding on the role of IT in supporting management control for CSR activities (see Figure 1.1). To achieve this purpose, the following research question is formulated:

**Research question:** *What are the roles of information technology (IT) in supporting management control systems for implementing CSR strategy?*

To operationalize the research question, Figure 1.1 presents an outline of the research model to show how this study is meant to work.

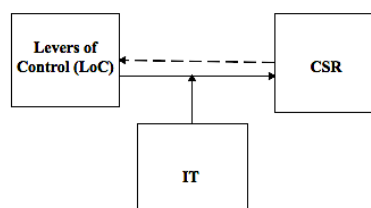


Figure 1. 1 Layout of the research model

The bold line that connects the two boxes at the top of Figure 1.1 represents the link between MCS (the levers of control (LoC) framework) and CSR. The dashed line between the two boxes

(CSR and LoC) represents the possible influence of CSR on the LoC. However, this association is not explicitly examined in the present study. However, to operationalize this phenomenon the thesis employs Simons' LoC framework (1995) comprising belief, boundary, diagnostic, and interactive control systems as the conceptual framework for reasons that are explained as follows.

First, the LoC framework has received increased attention in research literature on management accounting for taking a broad view of MCS (see e.g. Bisbe & Otley 2004; Henri 2006; Heinicke et al. 2016; Kruis et al. 2016; Mundy 2010; Schaltegger & Burritt 2010; Tessier & Otley 2012; Widener 2007). More specifically, the LoC framework recently gained popularity among researchers for its potential in understanding CSR and/or social and environmental issues (see e.g. Arjaliès & Mundy 2013; Gond et al. 2012; Henri et al. 2016; Henri & Journeault 2010).

Second, several scholars point out that LoC provides a conceptual framework for both formal (formalized) and informal (less formalized) control mechanisms, which are important for the implementation and integration of strategies as they complement and work together (see e.g. Soderstrom et al. 2017). The interaction between positive and dissentient control systems creates a situation of dynamic tension between opportunistic innovations and expected goal achievement which, in turn, is crucial for managing the challenges of the strategies (Heinicke et al. 2016; Henri 2006; Kruis et al. 2016; Mundy 2010; Simons 1999; 1995; Widener 2007). Moreover, the LoC framework has been justified for having the potential to identify and manage challenges (e.g. risks and opportunities) associated with the CSR strategy and/or with social and environmental issues (see e.g. Arjaliès & Mundy 2013; Gond et al. 2012; Henri et al. 2016; Henri & Journeault 2010).

The third box at the bottom of Figure 1.1 represents the role of IT, based on the study of Pearlson (2001) and Pearlson & Saunders (2010; 2004). In fact, this box introduces the intended contribution of the present thesis. To explore how IT supports management control for CSR, the thesis relies on the previous studies for the ability of IT infrastructure (see e.g. Pearlson 2001; Pearlson & Saunders 2010; 2004; Andersen et al. 2011; Thambusamy & Salam 2010) and investigates the roles of IT in MCS for managing CSR strategy through a qualitative case study in three large companies and groups in Sweden.

This study believes that IT can support the ability of managers to better develop, forecast, and select the correct information and to communicate strategies and business plans effectively. Drawing out the roles of IT into a CSR or social and environmental context, IT has the potential

to create access to global information and evokes the values and norms on social demands and responsibilities. It is seen that IT can help to achieve more efficient resource utilization and change customers' and suppliers' requirements. Likewise, it can create more efficient and environmentally friendly infrastructure, transport, sustainable energy supply chains, more effective use of natural resources, and more efficient waste management and reuse of materials (see e.g. Andersen et al. 2011; Thambusamy & Salam 2010).

**Intended contribution:** This thesis contributes to the literature on MCSs by considering the role of IT in supporting management controls for social and environmental issues. In terms of theoretical contribution, the present study supports recent calls for additional investigation regarding technical integration for CSR management control and sustainability (Arjaliès & Mundy 2013; Gond et al. 2012; Henri et al. 2016; Henri & Journeault 2010; Mundy 2010; Andersen et al. 2011; Thambusamy & Salam 2010). Furthermore, by investigating the role of the four levers of control (belief, boundary, diagnostic, and interactive), this thesis contributes to the broader understanding of the role of IT in different types of control systems in the management of CSR strategy. This will create opportunities for future studies in which IT plays a key role in different control systems for CSR.

In terms of practical contribution, by drawing on data collected from senior managers who are directly involved in the management of a CSR strategy, this thesis aims to understand how practitioners use IT applications in the management and control of a CSR strategy. This can contribute to companies planning to use MCS for CSR strategy implementation or to companies looking for inspiration on how to improve their MCS practices.

## ***1.2. Disposition***

Except the first introductory chapter, the thesis includes five chapters that are structured as follows:

Chapter 2- Research framework: This chapter presents the theoretical perspective.

Chapter 3- Method: The research method is described, including the choice of the data collection process and selection of cases.

Chapter 4- Results (Empirical findings): This chapter presents the findings based on the three case studies.

Chapter 5- Analysis: The key findings are summarised and the role of LoC in managing the CSR strategy and IT as a supporting tool are discussed.

Chapter 6- Concluding discussion: The final chapter highlights the research contributions and presents suggestions for future research.



## **2. RESEARCH FRAMEWORK**

This chapter covers the conceptual framework of the thesis based on the research model depicted in Figure 1.1 in the Introduction.

### ***2.1. Corporate social responsibility strategy and the role (s) of management control systems and information technology***

#### *2.1.1. The concept of corporate social responsibility*

Researchers have defined the concept of corporate social responsibility (CSR) from several perspectives (see e.g. Carroll 1999; Bowen 2013; Gray 2002; 1992; McWilliams et al. 2006). McWilliams et al. (2006) define CSR as activities in which the organization engages with social characteristics such as improving human resource management practices, producing environmentally friendly products or products with no fluorocarbon content, reducing pollution, and increasing recycling. More recently, CSR is described as a strategy that is concerned with social and environmental responsibilities of the organization to improve the long-term values (Arjaliès & Mundy 2013; Moon 2007).

However, the notion of CSR and sustainable development are criticized for being inconsistent. There are two assumptions associated with their inconsistency: the first relates to corporations' incapability with social responsibility, and the second is that the sustainability of the planet and its reserves are in conflict with economic (sometimes social) development (Moon 2007). Moon argues that 'CSR and sustainable development are both "appraisive" in that they are considered as valued and are not simply empirical concepts' (2007, p.297). However, Moon states that CSR contributes to sustainable development because it motivates corporations to act socially and environmentally responsible (2007, p.296).

Sustainable development was defined in the Brundtland report (1987) as 'development that meet the needs of the present without compromising the ability of future generations to meet their own needs'. This definition consists of two key concepts, that is, 'the concept of "needs", in particular the essential or basic needs of the poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet the present and future needs'(World Commission on Environment and Development 1987, p.43).

In a business context, the definition of CSR differs from one company to another. This is because corporations reflect on their practical orientation based on their responsibilities (Moon

2007). Indeed, considering this issue is crucial for the present thesis because it takes CSR into account from companies' perspective in which they give a distinct priority to their CSR strategy.

Moon (2007) argues that the definition of CSR varies for several reasons. First, CSR is associated with key strategic purposes (e.g. legitimacy, responsibility for externalities, competitive advantage). Second, CSR has substantive content (e.g. ethical, legal, economic). Third, the approach employed to identify responsibilities and evaluate the practices depending on which stakeholders are targeted by the corporation policies (Clarkson, 1995; Carroll, 1999; Moon, 2007). Consequently, it is reasonable for corporations to define CSR in ways that reflect their own business impact. Therefore, companies prioritise the different streams of CSR (Moon 2007; McWilliams et al. 2006).

### *2.1.2. The use of MCS to manage CSR*

Arjaliès & Mundy (2013) refer to MCS as a tool that managers employ voluntarily to contribute to their company's CSR strategy and transform practices that are compatible with sustainable development. Simons defines MCS as 'formal, information-based routines and procedures managers use to maintain or alter patterns in organizational activities' (1995, p.5). Scholars (see e.g. Arjaliès & Mundy 2013; Schaltegger & Burritt 2010) indicate that MCS plays a crucial role in the management of social and environmental activities, and as a technique that integrates these activities into the organizations' strategic plans and goals.

In managing CSR issues, Arjaliès & Mundy (2013) note that MCS enables managers to make decisions focusing on the related threats such as an upcoming legislation, and potential opportunities such as better waste management processes or diminishing of energy consumption. Also, MCS enables managers to measure the cost and resources that impact social and environmental issues.

Porter & Kramer (2006b) argue that some companies have a weak and disconnected management approach to their CSR strategy practices. Similarly, Arjaliès & Mundy (2013) and Henri & Journeault (2010) suggest that for managing CSR issues an improved understanding of the use of MCS tools or mechanisms is required. They state 'a greater understanding of how MCS enables managers to control and monitor CSR strategy is required to provide deeper insights into the role of MCS in transforming business practices and in managing threats and opportunities related to CSR' (2013, p.286).

Arjaliès & Mundy (2013) and Henri & Journeault (2010) emphasize that a specific mechanism, single practices, or traditional approaches of MCS tools are not adequate for managing social and environmental issues. For instance, environmental management systems (EMS) is a specific approach of MCS that involves single practices related to environmental issues. Similarly, traditional approaches of MCS such as budgeting, performance measurement systems, and risk management processes are mostly used to coordinate, monitor, and manage information related to the environmental strategy. Therefore, it requires MCS approaches that can manage any strategy from strategic formulation to strategic implementation, decision-making processes, and evaluation (Ferreira & Otley 2009).

To manage and integrate CSR or social and environmental responsibilities scholars have used and studied various management practices. For instance, Asif et al. (2013) studied a framework for integrating a CSR strategy that consists of a dynamic relationship between intended (top-down) and emergent (bottom-up) management approaches. The authors state the top-down approach is focused on the internal management and integration of CSR such as the relationships between the company and various internal stakeholders. The bottom-up approach, on the other hand, is focused on the external management and integration of CSR such as partnerships with external stakeholders, policies, and regulations.

In addition to these management approaches, Asif et al. (2013, p.11-13) advocate several processes including planning, doing, checking, and acting to manage and integrate a CSR strategy. In the planning stage, CSR integration refers to settling the strategic objectives and directions of CSR issues. In the doing stage, the organizational structure is designed to facilitate implementation and integration of CSR objectives. Similarly, the checking stage involves monitoring, integrated auditing, and benchmarking of CSR issues, and the acting stage refers to the communication of CSR issues.

## ***2.2. The Levers of Control (LoC) framework***

### *2.2.1. The use of LoC to manage CSR*

To manage CSR issues, a strand of literature (see e.g. Arjaliès & Mundy 2013; Gond et al. 2012; Henri et al. 2016; Henri & Journeault 2010) has used Simons' (1995) LoC framework as an analytical tool. The LoC framework is used because it has the potential to navigate the strategic renewal and also initiate different types of control systems for managing and achieving the objectives of the CSR strategy (Arjaliès & Mundy 2013; Henri et al. 2016; Henri 2006; Simons 1995).

Curtis et al. (2015) and Tessier & Otley (2012) note that the LoC framework reinforces the use of four types of MCSs (levers of control) - beliefs systems, boundary systems, diagnostic systems, and interactive control systems - to manage strategic uncertainties such as risks and opportunities such as innovations for communicating the core values of the strategy. Other researchers advocate (see e.g. Heinicke et al. 2016; Kruijs et al. 2016; Widener 2007; Simons 1995) that the use of the LoC framework creates a balance in operating different types of control systems, as it is required for managing strategies including CSR. On the one hand, the positive and negative interplay between the four levers of control generates a dynamic tension or a balance between innovation and strategic renewal and expected goal attainment on the other.

The above-mentioned characteristics of the LoC framework and the recently increased attention and recommendations made by researchers for applying this framework for managing CSR issues is the rationale for the present thesis to employ this framework.

As mentioned above, the LoC framework provides managers with four different and complementary types of controls for organizing and managing business strategies, see Figure 2.1. The business strategy at the core of this framework includes four key constructs (i.e., core values, risks to be avoided, strategic uncertainties, and critical performance variables), which offer a structure to companies to compete and settle business strategies vis-à-vis Competitors.

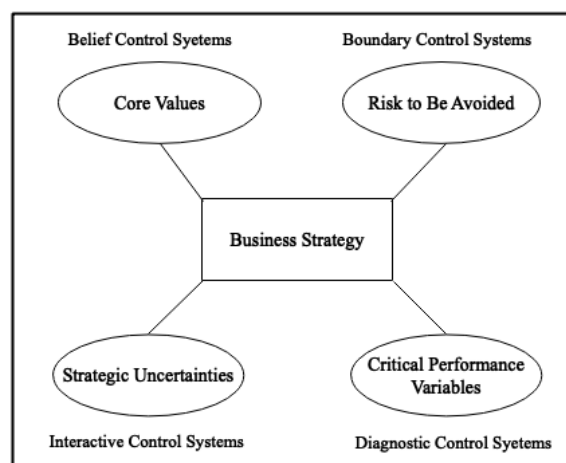


Figure 2. 1 Controlling business strategy: Key variables, adopted from Simons (1995, p.7)

### **Belief Control Systems**

Simons (1995) definition of belief control systems is ‘*strategy as perspective*’ (see Table 2.1). The primary purposes of these systems are to communicate the vision, mission, and values of the business, and to inspire and search for organizational opportunities.

Control systems	Purpose	Communicates	Control of strategy as
Belief Control Systems	Inspire and expand search activity	Vision	Perspective

Table 2. 1 Belief control systems, adapted from Simons (2000, p.304)

### ***Belief control systems within a CSR context***

Arjaliès & Mundy (2013) refer to Simons (1995) and define belief control systems as a series of formal organizational statements that managers employ to communicate the core values of strategy and to provide an established strategic plan. These authors note that within a CSR context, belief control systems are used for several purposes such as building a shared vision of CSR, integrating employees around a series of organizational values, and inspiring employees to search for new opportunities. These control systems are leveraged through a set of formal MCS (e.g. CSR strategic plans, training sessions, and communication tools such as an intranet platform), which incorporate explicitly the CSR mission and values, see Figure 2.2 based on the study of Arjaliès & Mundy (2013, p.284–300).

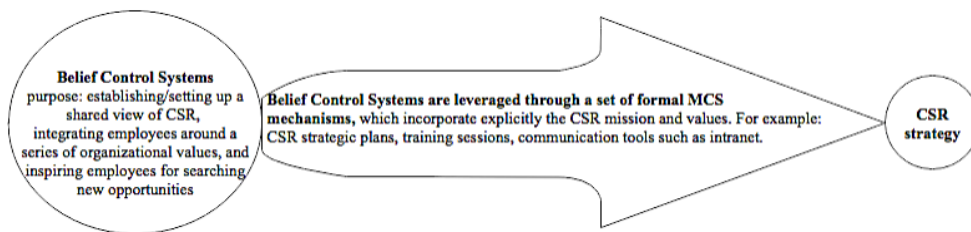


Figure 2. 2 Belief control systems within a CSR context

### **Boundary Control Systems**

Simons' (1995) defines boundary control systems as '*strategy as competitive position*' (see Table 2.2). These control systems are used to provide limitations around the business strategy through communicating the strategic domain (e.g. risks and principles).

Control systems	Purpose	Communicates	Control of strategy as
Boundary Control Systems	Provide limits of freedom	Strategic domain	Competitive position

Table 2. 2 Boundary control systems, adapted from Simons (2000, p.304)

Boundary control systems ensure that strategic choices are embedded within the standard domain of business strategy (Simons 1995; 1999). These control systems are applied in an organization to avoid the slack and loss of controls and to set limits and rules that need to be respected (Martyn et al., 2016).

**Boundary control systems within a CSR context**

Arjaliès & Mundy (2013) note in a CSR context that the purpose of boundary control mechanisms is to create restrictions and business conduct boundaries around the CSR programmes and activities, see Figure 2.3. Within a CSR context, boundary control systems are leveraged through a set of formal and explicit MCS mechanisms (e.g. external documentation on legal and voluntary regulations, such as GRI, code of conduct, ethics guide, guidelines on approved activities, and job description), which explain both the proper and improper areas of CSR strategy.

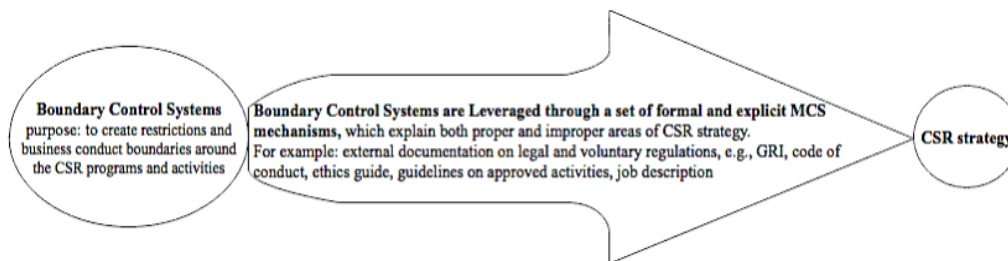


Figure 2. 3 Boundary control systems within a CSR context

**Diagnostic Control Systems**

Simons’ (1995) concept for diagnostic control systems is ‘*strategy as plan*’ (see Table 2.3), with the purpose to coordinate and monitor the implementation of intended strategies through strategic plans and goals.

Control systems	Purpose	Communicates	Control of strategy as
Diagnostic Control Systems	Coordinate and monitor the implementation of intended strategies	Plans and goals	Plan

Table 2. 3 Diagnostic control systems, adapted from Simons (2005, p.304)

Simons describes diagnostic control systems as ‘*formal mechanisms that managers employ to monitor organizational outcomes and to correct deviations from pre-set standards of performance*’ (1995, p.59). To operate diagnostic control systems, goals must be defined, performance measures should be aligned, incentives designed, reports reviewed, and significant exceptions are pursued (Simons 1999, p.211).

**Diagnostic control systems within a CSR context**

Arjaliès & Mundy reinforce that within a CSR context, the purpose of diagnostic control systems is ‘to define and measure key performance indicators for CSR strategy against internal and external targets’ (2013, p.284–300) and identify the gaps between date achievements and previous plans.

To leverage diagnostic control systems in a CSR context Arjaliès & Mundy refer to a range of MCS mechanisms such as reports on environmental management systems (EMS), standardized CSR reporting processes, and competitive benchmarking that are employed by senior managers to manage CSR activities (2013, p. 284–300) (see Figure 2.4).

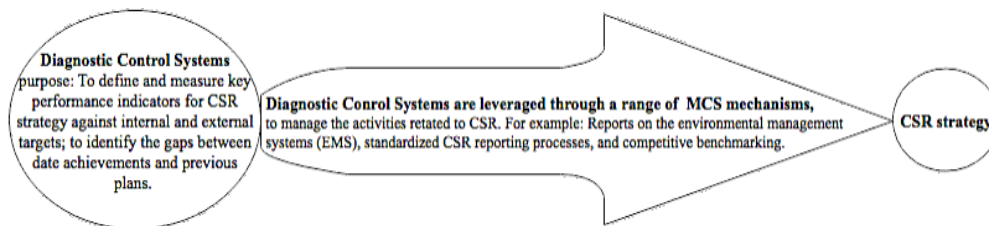


Figure 2. 4 Diagnostic control systems within a CSR context

### Interactive Control Systems

Simons' (1995) concept for interactive control systems is 'strategy as pattern of action', with the purpose to stimulate and guide the emergent strategies by communicating the strategic uncertainties (see Table 2.4).

Control systems	Purpose	Communicates	Control of strategy as
Interactive Control Systems	Stimulate and guide emergent strategies	Strategic uncertainties	Pattern of actions

Table 2. 4 Interactive control systems, adapted from Simons (2005, p.304)

Broadly, interactive control systems are formal MCS mechanisms that are used to identify opportunities and to manage strategic uncertainties which include contingences that could endanger or create invalidity on central strategic statements (Simons 1995; 1999).

### *Interactive control systems within a CSR context*

In a CSR context, Arjaliès & Mundy state that the purpose of interactive control systems is to articulate the emergent strategies and identify opportunities for innovations associated with CSR activities (2013, p. 284–300). To leverage interactive control systems in a CSR context Arjaliès & Mundy (2013) point to some MCS mechanisms such as regular meetings between senior managers and subordinates, intranet systems for communities or practitioners, and exchange of best practices to manage strategic uncertainties and opportunities associated with CSR activities (see Figure 2.5).

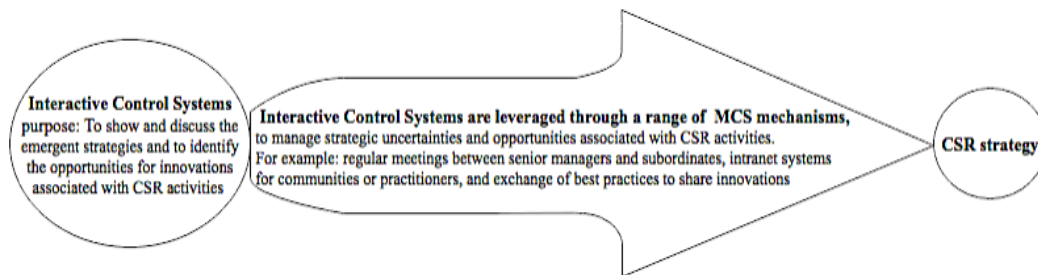


Figure 2. 5 Interactive control systems within a CSR context

### 2.3. The role(s) of IT in supporting MCS

In terms of the role(s) of IT, the present thesis draws on two domains of research: the first domain shows that there is lack of knowledge concerning how IT drives MCS logic and how MCS problems may be solved by IT solutions (Granlund and Mouritsen, 2003; Granlund, 2007; Granlund et al. 2013). One hypothesis may be related to the difficulty of using IT applications that could create complexity in solving management control problems. Another hypothesis may be related to the communication between managers (business executives) and IT managers, which may create misalignment between business requirements and IT support (Larsson et al. 2001). Therefore, IT capabilities may have positive or negative effects on the management control systems and seem as a challenge and/or a resource for an organization. Granlund (2007) and Granlund & Mouritsen (2003) highlight that IT capabilities should be recognized and used as an add-on-role to enforce management control in an organization and not be taken for granted.

The second domain of research points to the potential of IT applications that support management control of business strategy plans and processes (see e.g. Bhatt & Grover 2005; Granlund 2007; Liew 2014; Moorthy et al. 2012; Melville & Kraemer 2004; O'Donnell & David 2000; Taipaleenmäki & Ikäheimo 2013). In addition, Pearlson (2001) points out that IT has the capability to informate, automate, and transformate the management of data and information handling processes. Pearlson & Sounders (2010; 2004) also note that IT applications facilitate many processes that are linked across companies by creating an integrated supply-chain management system, which creates workflow coordination that are not only internal to a company.

Relatedly, there are a few researches that reinforce the role of IT in supporting MCS for CSR issues. Thambusamy & Salam (2010) postulate that organizations use IT to manage their CSR activities that are linked to environmental sustainability initiatives such as reducing resource utilization or waste management. Moreover, IT applications enable easy access to information about social and environmental issues and transform the way of communicating



these issues. Furthermore, Thambusamy & Salam (2010) and Gray (1992) state that IT facilitates the management and reporting processes of material consumption, pollution, and waste production, as well as managing relevant activities and energy efficiency solutions.

Referring again to the study of Pearlson (2001), the author observes that IT affects organizational variables and supports managers in various ways to improve the effectiveness of MCS processes. As mentioned earlier in this section, Pearlson (2001) points to some IT capabilities such as automating, informing, and transforming of data and information processes. These capabilities of IT are explained as follows.

Pearlson (2001) points to automation of management process activities as another capability of IT applications. The activities include collecting, analysing, and transferring of relevant data and information. Automation of management processes enables high-speed transfer of data and information across the organization, and this may facilitate decision-making through further collaboration and coordination (Pearlson 2001).

Information technology (IT) communication channels such as video teleconferencing, unified communication channels, virtual private networks, and intranet platforms that companies can use to informate and communicate various data and information with stakeholders (Pearlson & Saunders 2010).

Furthermore, IT applications also have the capability to informate employees through easy collection of and access to data and information. This supports the speed of management processes (O'Donnell & David 2000). Speed of management processes may affect the process of creating feedback mechanisms and improving management control in receiving, analysing, and evaluating data and information in parallel (Pearlson 2001; Pearlson & Saunders 2010; 2004).

According to Pearlson (2001), IT applications have the capacity to transform data and information. The benefits of IT applications include transforming, as well as managing and communicating data and information processes across various business activities. Data are collected from different units of the organization and various business processes and transformed so that they can be used in organizational processes (Pearlson & Saunders 2010). For instance, IT application tools such as Enterprise Information Systems (EIS) enable transformation of business processes. These systems transformate fragmented data and information that are stored across various departments and business units in an organization (Pearlson 2001).

Pearlson (2001) states that the process and progress of strategy activities must be monitored in order to enable the management of strategy within the organization. In addition, IT applications have the potential to support and monitor these strategy activities through storing, manipulating, and analysing the relevant data and information.

However, in addition what is mentioned above, the recent research on data visualization (i.e. graphical representation of data and information) as an additional potential of IT applications could be an advantage. Quattrone (2016) concludes that visualization of data and information supports managers to reflect and link the relevant data and information quickly, and to analyse a vast amount of transaction data (Quattrone 2016). Also, visualization of data and information through multiplanes and dashboards makes the comparison of different business parameters simpler and reduces the time for decision-making processes (Brignall & Ballantine 2004). The combination of visualization tools with intuitions from data mining and data warehousing may provide additional opportunities to reinforce the relationship between the management and various stakeholders (Jourdan et al. 2008). Tegarden (1999) states that visualization of business information allows to exploit the human visual system to extract information from data, provide an overview of the complex datasets, identify the structure, patterns, trends, and the relationship between data and information.

### **3. METHOD**

This chapter describes the method used for the empirical investigation of the research question. The chapter is structured as follows: choice of method, selection of cases, and data sources and data collection.

#### ***3.1. The choice of method***

The research question ‘*What are the roles of IT in supporting management control systems for implementing CSR strategy?*’ is inspired by previous studies that debate MCS and integration of CSR into business processes as part of the business strategy (e.g. Arjaliès & Mundy 2013; Asif et al. 2013; Gond et al. 2012).

The present study applies a qualitative research method using a case study approach to investigate this practice. This method is chosen to respond to the recent calls in the literature for a qualitative empirical study to investigate these issues (see e.g. Arjaliès & Mundy 2013; Gond et al. 2012). Also, earlier studies in this regard argue that only a qualitative investigation through a case study approach can facilitate a deeper understanding of the role of MCSs in organizations to manage strategies such as CSR (see e.g. Mundy 2010; Asif et al. 2013; Rodrigue et al. 2013). Therefore, the research question is investigated by collecting data through interviews and secondary data are supported by a comparison of the selected companies, which has also been recommended by the study done by Arjaliès & Mundy, ‘[...] a comparison point for future research, a position which has been notably lacking [...]’ (2013, p.288).

#### ***3.2. The selection of cases***

##### ***3.2.1. Criteria for the selection of cases***

I used a certain set of criteria for selecting companies to investigate. These criteria are described next.

The first criterion is related to avoiding limiting the definition of CSR to certain aspects. In order to avoid barriers when selecting cases for the present study, the CSR strategy was considered from a holistic perspective and as a critical component of an organization’s core business strategy, which includes economic, environmental, and social aspects. As mentioned in the first and second chapters of this thesis, the term CSR is broad and the definition varies from one company to another for several reasons such as strategic purposes, substantive content, and stakeholders’ policies (Clarkson 1995; Carroll 1999; Moon 2007).

If CSR is considered from a single or specific aspect, there may be risks for the researcher in collecting data or restricting the researcher to a specific definition and aspect of CSR, and this may not be the focus domain of the company. Therefore, for the present thesis, CSR is considered from the company's perspective and focus domain. For the same reason, IT systems in this study are not considered from a hardware or software perspective, rather the companies studied in this thesis had the opportunity to describe the role(s) of their IT systems in the way they are using these systems to support the management control of their CSR strategy.

The second criterion is related to the company's implementation and contribution to CSR. As mentioned above, it is important that the selected companies or cases have implemented CSR/sustainability strategy and contributed to some aspects of CSR (social, economic and environmental). To identify such companies, several cases were reviewed in advance, including the selected companies. The CSR annual reports and present status of the companies were reviewed through the companies' website and available documents. In addition, it was ensured that the selected companies are concerned about CSR or sustainability issues and contribute to the United Nations (UN)<sup>5</sup> sustainable development goals.

The third and final criterion is linked to the size of the companies. Three large companies and groups were selected for investigating the research question. The argument for selecting large companies is that they work more actively with CSR issues than small- and medium-sized companies (SMCs). Research on management accounting and control systems suggests that larger companies have more sophisticated systems and routines compared to SMCs. Thus, focusing on large-sized companies increases the likelihood of identifying companies that have implemented MCSs for sustainability.

### **The selected companies**

#### ***Company X***

Company X is a service and transport company. The company's vision is to create higher efficiency in its technical operations by reducing the company's impact on the environment and becoming the customers' first choice by contributing to company success and the development of society. The company has implemented CSR and actively works on the objectives of it to influence and develop the social and environmental values. The company's CSR strategy is linked to the UN Sustainability Development Goals.

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<sup>5</sup> <https://www.unglobalcompact.org/sdgs>

### ***Company B***

Company B is a leading manufacturer of transport solutions, construction equipment, and marine and industrial engines. The company's vision is to be the most desired provider of transport solutions and the mission is to create prosperity through transport solutions. The company's CSR strategy builds on the standards of the UN Global Compact<sup>6</sup> and contributes to sustainable transport, shared value creation, and responsible business.

### ***Company Z***

Company Z is a technology leader in the field of power and automation. The company has a leadership position in innovative and digital connections that are used to deliver industrial equipment and systems. The company delivers industrial solutions related to efficiency, safety, productivity in utilities, industries, transport, and infrastructure. The company has implemented CSR and has plans to increase work related to CSR strategy objectives and values in order to develop social and environmental values at all levels of the business strategy. The company is a member of the UN Global Compact and has implemented the UN Guiding Principles on Business and Human Rights and has used the recommendations to evaluate the expectations of corporate behaviour.

### ***3.3. Data sources and data collection***

I use two types of data, interview and the secondary sources data, to investigate the research question. These sources are described as follows.

#### **Interviews**

Interviews are an essential source for conducting case studies. To perform the interviews for investigating the research question of this study, several questions were prepared through an interview guide (see Appendix 1) based on the theoretical framework. The questions are designed in two categories: The first category of questions is based on understanding the relationship between the LoC and CSR strategy grounded in Simons' LoC framework (1995; 1999) and inspired by the study by Arjaliès & Mundy (2013). The second category of questions is defined to comprehend the role of IT in managing CSR activities based on Pearlson (2001), Pearlson & Saunders (2010; 2004), other authors in the information systems discipline, and Simons' (1999) LoC framework. However, the questions are conducted in a relatively open manner in order to minimize the limitations of the investigation.

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<sup>6</sup> <https://www.unglobalcompact.org>

In addition, to guide the interviews, the questions were discussed with the research supervisors before initiating the empirical phase of this thesis. The next interview process step was the selection of respondents. The respondents were selected based on their involvement in the management of CSR activities in the organization and their position in this area, as well as the recommendation of earlier studies such as Arjaliès & Mundy (2013) and Widener (2007), and discussions with supervisors. The position of the respondents was important because of their knowledge and authority in the company to cover questions regarding CSR issues. Accordingly, the respondents who have higher responsibility in the area of CSR or sustainability were contacted through e-mails. Table 3.1 below shows the list of the respondents within the selected companies along with the interview information.

The questions were sent in advance to the respondents in order to make them familiar with the type of questions and prepare for the interview. The interviews were conducted in-person through personal meetings, except in one case where a physical meeting was not possible, and the interview was therefore conducted over the phone. The interviews lasted between 2–4 hours and were recorded and subsequently transcribed. When I was asked to avoid using a tape recorder, I used a written note and recollected the details of the interview immediately and then the information was transcribed. Particularly, the tape recorder was not allowed for the telephone interviews, and a follow up control of the responses was made through e-mails to ensure the accuracy of the data. The interviews were conducted between August and November 2016. Table 3.1 below reveals the list of the case study companies, their industry type, interview duration, and respondents' position.

Company	Type of Industry	Interview Duration/hour	Position of Respondents
Company X	Service & Manufacturing	4	a) Head of Sustainability b) Environmental Manager
Company B	Service & Manufacturing	4	a) Director, Environmental Affairs b) Director, External CSR management, corporate communications, and sustainability affairs
Company Z	Service & Manufacturing	2	a) Head of Sustainability

Table 3. 1 List of case companies and respondents interviewed during data collection

### Documentary sources

In addition to primary data, secondary data were used to analyse the empirical findings. Secondary data support primary data and information in case of inherent potential errors that

may have not been considered by the researcher through the investigation. Secondary sources are supportive, because they provide researchers with specific details to confirm the primary sources such as interviews (Yin 2009). Companies' websites, internal documents, and reports regarding CSR, and CSR annual reports were used as secondary sources for supporting the study analysis. After the in-person interviews were conducted, I asked the respondents for internal documents and/or reports regarding CSR in their respective company. The respondents provided me the sources, if they existed. If the company did not provide me with internal documents/reports, I used public sources such as companies' websites and CSR annual reports. These secondary sources supported this researcher to find relevant supplementary information for analysing the empirical findings.

## 4. EMPIRICAL RESULTS

This chapter includes the empirical findings for the three companies examined.

### 4.1. Company X

Company X is a service and transport company, with the aim to create higher efficiency in technical operations for customers. The company is actively implementing CSR and works within several areas as described in Table 4.1. The company's CSR objectives are linked to the UN Sustainability Development Goals. These objectives are defined to ensure the short- and long-term performance of its CSR strategy. The company's CSR objectives aim at contributing to financial performance, reduce the company's environmental impact, and influence employees to adopt ethical business principles.

Aspects of CSR	Areas	Objectives	Status
Economic	Responsible Consumption	<ul style="list-style-type: none"> <li>- To reduce waste and increase recycling through controlling resources and responsible purchasing.</li> <li>- To reduce consumption of plastic materials onboard to 50 % within three years and eliminate them entirely by 2030.</li> </ul>	<p>On track</p> <p>In process</p>
Social	Good Health and Well-Being	<ul style="list-style-type: none"> <li>- To care for each other and an absolute commitment to safety.</li> <li>-To actively promote the well-being of guests and staff.</li> <li>- To decrease the LITF (lost-time injury frequency) rate from 2.8% to 1.8% by creating better routine and training (education) programmes.</li> <li>- To ensure safe operations for people, environment, and load.</li> </ul>	<p>On track</p> <p>On track</p>
Environmental	Clean Energy	<ul style="list-style-type: none"> <li>- To reduce carbon dioxide (CO<sub>2</sub>) emissions to 2.5% per nautical mile annually.</li> <li>- To improve energy efficiency continually and actively stimulate the use of clean energy sources.</li> </ul>	On track
	Life Below Water	<ul style="list-style-type: none"> <li>- To minimize impact on marine life.</li> <li>- To improve handling of black and grey water, also considering antifouling, and minimizing the use of chemicals with toxic content.</li> </ul>	On track

Table 4. 1 Areas and objectives of CSR strategy, Company X

### 4.2. The roles of belief control systems in managing CSR

In general, the company uses belief control systems to specify formally and clearly communicate the objectives of its CSR strategy and short- and long-term CSR performance (see Table 4.1). The company outlines its short-term performance on a one to three years basis and its long-term performance until 2030. For example, they are working to reduce CO<sub>2</sub>



emissions by 2.5% annually and the use of plastic materials by 50% within three years and eliminate them entirely and become carbon neutral by 2030.

To communicate the objectives of the CSR strategy and ensure that every employee is engaged and making effort towards the achievement of the defined objectives, CSR managers have designed two internal newspapers or magazines that are called 'Sfärnytt' and 'Connection'. Similarly, they offer a course and education that is called 'Save'. 'Save' is about the individual's impact on the environment. In addition, the company provides employees with activities such as workshops regarding different aspects of CSR. The company's website, intranet, and internet are some additional mechanisms to ensure that employees are involved in the CSR activities. Managers responsible for implementing CSR use belief systems to inspire employees seeking for innovation and new opportunities for improvement of CSR activities. They have designed and implemented a programme called 'Innovation' to inspire employees. The programme offers employees the opportunity to propose new ideas and suggestions regarding the improvement and innovation of CSR activities.

#### *4.2.1. The role(s) of IT in supporting belief control systems*

To engage and communicate CSR strategy objectives with as many internal employees and external stakeholders as possible, CSR managers use IT capabilities. All educations and training programmes are held online. The intranet, films, video clips, and graphs are employed internally to visualize and transfer information regarding CSR objectives. CSR managers mentioned that visualization helped them to reinforce the key message of CSR objectives, however their IT applications are restricted for advanced visualization of data and information.

IT applications are used as online education programme system and an additional tool for transmission and visualization of CSR strategy objectives. However, as the respondents mentioned, the company's IT systems are constrained in supporting the visualization of CSR for some reasons. First, the IT systems are not entirely compatible with the visualization of various types of CSR activities. Second, the IT systems are not integrated. Therefore, the demonstration of different activities is difficult. The lack of having an integrated IT system and adequate capacity for visualization of various CSR activities create a weak flow of communicating CSR throughout the organization. The respondent states:

*'[...] IT can work as a system that create flow of communication through the organization of course. It depends on an integrated system, which we currently lacking'.  
(Head of Sustainability)*

How Company X uses belief control systems to manage CSR strategy	
Purpose	To specify both the short- and long-term performance of CSR strategy objectives, create a shared value of CSR objectives, engage employees in CSR strategy activities and ensure that they realize and follow CSR objectives and activities correctly, and inspire employees seeking innovation and new opportunities.
How leveraged	Define time periods for both short- and long-term performance goals (e.g. 1–3 for short-term performance and the year 2030 for long-term performance), dialogues, communications, internal newspapers like ‘ <i>Sfärnytt</i> ’ and ‘ <i>Connection</i> ’, educating through courses like ‘ <i>Save</i> ’, using ‘ <i>Innovation</i> ’ programmes for seeking innovation, and external communication through website.
Examples of MCS	Communicating short- and long-term performances; communicating through tools such as intranet and newspapers; organizing workshops; training sessions.
The role(s) of IT in supporting belief control systems for managing CSR strategy	
Role(s)	Communicating and visualizing CSR strategy objectives both internally and externally
How leveraged	E-learning, online programmes, films and video clips, graphs, websites, and Intranet

Table 4. 2 Summary of the use of belief control systems and roles of IT for managing CSR

### 4.3. The roles of boundary control systems in managing CSR

Boundary control systems are used to define the business relationship of the company with both internal and external stakeholders. The company has developed a business code of conduct that outlines norms, rules, and responsibilities for both internal and external (these are communicated to key stakeholders) use. Internally, CSR managers control the environmental impact and they receive performance reports from each division and propose restrictions if necessary. Similarly, they control societal issues such as examining gender equality and employees’ recruitment. Externally, the company meets several challenges concerning external stakeholders. Typically, suppliers and customers are simultaneously the company’s competitors. Therefore, the company considers acts very clearly and cautiously regarding social and environmental boundaries. For example, road transport facilities are the company’s customers and/or suppliers, and they can also coexist as the company’s competitors. Therefore, the company requires performance that is transparent regarding CSR boundaries when it is trading in road transport facilities. Environmental activists and institutions are other external relations for the company. They usually have a negative attitude about shipping industries.

Therefore, Company X considers being very accurate and responsive in its activities and believes in holding a transparent plan for its CSR and business boundaries.

*4.3.1. The role(s) of IT in supporting boundary control systems*

Respondents mentioned briefly that IT has a weak role in managing CSR strategy when it comes to boundary controls. Access to the company’s code of conduct has been mentioned as the only role IT has in these issues. The respondent stated that IT creates an easy access to both internal and external users. Furthermore, some formal conferences regarding the rules of CSR activities were performed through IT facilities. Respondents mentioned as below in this regard:

*‘[...] we are positive about our IT system regarding the support of sustainability issues. But we do not receive a direct support for these issues. We use a lot of Excel and email and telephone conferences and so on, but we don’t have any smart IT system for that. Since we need to travel a lot, we put a travel policy that we use of videoconferences instead of physical traveling. We create a lot of conference installations. Recently, we made 10–12 videoconferences regarding formal rules and regulations included very large group with a very good quality’.* (Environmental Manager & Head of Sustainability)

How Company X uses boundary control systems to manage CSR strategy	
Purpose	Explicitly define the business relationship or the company’s CSR strategy with both internal and external stakeholders.
How leveraged	Through having an accurate statement and transparent plan of the CSR strategy objectives and activities such as code of conduct.
Example of MCS	Guidelines on approved activities like code of conduct and ethics guide, for example, recruitment, and employees’ right.
The role(s) of IT in supporting boundary control systems for managing CSR strategy	
Role(s)	No large impact, providing accessibility to the company’s code of conduct for both internal and external users and facilitating the installation of formal conferences regarding the rules of CSR activities.
How leveraged	Through video conferences and company website.

**Table 4. 3 Summary of the use of boundary control systems and roles of IT for managing CSR**

#### ***4.4. The roles of diagnostic control systems in managing CSR***

The company uses diagnostic controls to manage CSR strategy in the following steps. These steps are described in detail subsequently.

- Budgeting
- Decision making about the CSR strategy
- Follow up CSR performance
- Designing incentives

##### ***Budgeting***

The company allocates a budget for CSR activities, which is not defined as a separate CSR budget. However, respondents mentioned that they have a plan to allocate a separate budget with full control over resource allocation for CSR activities in the upcoming year. Therefore, currently, they allocate budget only for CSR activities that are prioritized. The following activities are listed as priority:

- Reduction of carbon dioxide (CO<sub>2</sub>) emission to 2.5% annually
- Using clean energy sources
- E-learning platform for educating about CSR aspects (e.g. social, economic, and environmental)
- Energy Saving Programme (ESP)

The first three activities are treated as priority because they pursue CSR strategy objectives, but the reason why ESP programme is also set as a priority is described as follows: The company's ESP programme is given priority for three crucial reasons: first, this programme takes care of the operation of ships; second, it handles 'technical updating'; and third it measures the 'handling rate', that is, the propulsion should be as efficient as possible. The ESP programme measures the fuel/energy consumption of ships and compares and proposes new designs for reducing fuel consumption. The results that are achieved from ESP programmes are crucial for CSR managers and the group management because they enable to compare the actual performance of the CSR strategy objectives with the expected performance (e.g. reducing CO<sub>2</sub> emissions by 2.5% annually). Thereby, CSR managers along with the group management propose further development of activities and prioritise activities that are required.

##### ***Decision making about the CSR strategy***

Decision making concerning the CSR strategy and budget allocation for CSR activities are handled in a top-down approach. The group management, comprising 5–7 senior managers (i.e.,

CEO, finance manager, HR manager, and technical operations managers) decides on what is important and need to prioritize in terms of CSR activities. The group management decides the CSR strategy objectives and evaluates their performance. It selects the CSR managers with precisely defined tasks and expects managers from other departments to report their activities and operations to the CSR managers for further decisions, evolution, and improvement of CSR performance.

### ***Follow up CSR performance***

To follow up on CSR performance, CSR managers have adopted certain mechanisms. These mechanisms help managers to confirm that CSR activities follow the objectives precisely and identify activities that require further improvement. The mechanisms described are as follows:

- Checklist
- Consultation and reports
- CSR standards and legislations

**Checklist:** It includes a 30-point link to each area of the CSR programme. The CSR managers control the points in each area and report to the responsible division for further improvement in potential areas. Generally, the potential areas are oil and fuel consumption at terminals or waste separation (recycling). The CSR managers prepare reports regarding these issues every three to six months or annually. Next, they compare the reports and status of CSR performance in each area for further development of potential activities. Following up on the checklist and controlling points that enable managers to analyse how much waste and water have been used and how many ships are driven in the surrounding quays.

**Consultation and reports:** The CSR managers follow up on the CSR performance through consultation with employees and reports are received from different departments. Employees discuss issues with CSR managers regularly and propose ideas for innovation and further development of CSR activities. The CSR managers raise the identified issues regarding CSR activities to the group management for further negotiations and decisions on improving the CSR strategy performance.

**CSR standards and legislations:** CSR managers keep the CSR performance used updated by monitoring standards like ISO certificates and governmental regulations. This helps them to watch the company's CSR performance and compare the rules and standards locally and globally for further development.

### ***Designing incentives***

Company X uses a programme for designing incentives for employees to ensure everyone's efforts on the desired goals of a CSR strategy. The company has created a programme called 'Innovation'. This programme gives employees the opportunity to envisage new ideas for the CSR activities that lead to innovation and development of the CSR strategy. The programme aims at enhancing employees' creativity, and if they propose valuable ideas for improving the CSR, they will receive rewards, bonuses, and promotions.

#### ***4.4.1. The role(s) of IT in supporting diagnostic control systems***

Company X uses three types of IT systems (system software) and an application software for facilitating diagnostic control systems to manage its CSR strategy. These systems and their roles are described next:

#### ***NAPA***

It is a leading software provider of intelligent solutions for ship design and operation with the mission to improve safety and eco-efficiency of the maritime operations. NAPA has the capability to bring digital reporting to mainstream shipping and to monitor the performance of processes. NAPA shipping solutions are designed to optimize vessel efficiency, safety, and enhance productivity both onboard and for shore-based offices (NAPA, 2016).

As mentioned previously, results received from the ESP programme help CSR managers to identify areas that need additional resources for improvement. Moreover, NAPA facilitates ESP programmes by analysing the data and information that are received from shipping. Also, NAPA includes several measurement tools, which measure fuel consumption in terms of when and where it occurs on the ships. It also shows motors that consume more and those that consume less. The ESP programme receives this information from NAPA and measures activities such as the present consumption of fuel by ships, compares fuel consumption by different trips, and follows up on what works well in ships and what does not work properly. The results of these analyses support CSR managers for several purposes. First, it ensures that the CSR strategy objectives are on track; second, they enable to prioritize and allocate resources for activities that are required; and third they follow up on the operational process of CSR activities through NAPA. In this way, CSR activities are updated and enable to identify exceptions or deviations that may occur in the operation of CSR activities.

### ***FMS***

It is an additional measurement tool the company intends to install. This system is called a fuel management system (FMS). This is also a system that is provided by NAPA. The company states ‘Sustainability and digitalizing go hand in hand’ by implementing FMS. FMS also facilitates the operational processes of CSR activities through automatization. Note that FMS is constructed from several flow meters that automatically and continuously indicate the amount of fuel consumed by the various machines in a ship. Likewise, ESP programme benefits from the data that are stored by FMS to analyse how different ships are operating and what is working best in terms of the operation of ships (speed, route, etc.). Furthermore, FMS enables ESP programme to evaluate technical installations on ships (e.g. dock and replacing the propeller of ships). Consequently, the FMS system accelerates the operational processes through automation.

### ***Bick View***

It is a database system that is used in data collection and for receiving statistical information from different parts of the organization. The name Bick View is a company specific application based on Qlick View. Bick View is a large database system which supports CSR managers to manage CSR strategy through visualization, access to data, monitoring processes, collecting of statistical data, and reporting of activities. Bick View also facilitates CSR managers to follow up and measure carbon dioxide (CO<sub>2</sub>) emissions and other toxic gases generated by ships. It also creates ease of use through measuring the length and numbers of trips made by ships and visualizing the information about ferries on a dashboard, including various applications. The CSR managers follow the information through Bick View regarding, for example, sales, purchasing, trips and tours; this information supports them to organize CSR activities such as reducing plastic materials, recycling, and types of suppliers and customers. Bick View collects daily and monthly information regarding CSR activities and facilitates managers to create monthly, quarterly, and annual reports. In addition, by following the statistical information received from Bick View, CSR managers can compare CSR activity reports and results to identify any exceptional report or deviation.

### ***Innovation programme***

This is an application software that is used for designing incentives. This programme is designed for employees to ensure that employees focus on the goals of the CSR strategy. Simultaneously, this programme creates the opportunity for employees to initiate new ideas for improvement of CSR activities. The programme motivates employees and boosts their

creativity, and if they propose valuable ideas for improving CSR activities, they will receive rewards, bonuses, promotions, etc.

How Company X uses diagnostic control systems to manage CSR strategy	
Purpose	Resource allocation and prioritizing CSR activities, follow up on CSR performance, and designing incentives for further innovation and creativity of CSR.
How leveraged	Prioritizing activities like reducing of CO <sub>2</sub> and using clean energy sources, E-learning education regarding CSR aspects, ESP programme, checklists, consultation and reports, CSR standards and legislations, innovation programme.
Example of MCS	Budgeting, CSR reporting and reports
The role(s) of IT in supporting diagnostic control systems for managing CSR strategy	
Role(s):	Following up on CSR activities, analyzing and monitoring the operational processes, automating and accelerating the operational process, visualization, access to data, monitoring, collecting statistical data on reporting activities, and designing incentives.
How leveraged:	NAPA, Bick View, FMS systems and Innovation programme.

Table 4. 4 Summary of the use of diagnostic control systems and roles of IT for managing CSR

#### ***4.5. The roles of interactive control systems in managing CSR***

Generally, interactive control systems are used by managers to engage interactively in the decision-making activities of employees. Managers choose to communicate and have ongoing dialogues with employees in order to highlight and change the ways of performing things. Through these controls, managers encourage employees to find ways to focus on the company's strategic uncertainties. To reflect on the strategic uncertainties, CSR managers must deal regularly with dialogue and discussion with technical operations managers and subordinates about environmental issues such as toxic emissions and fuel consumption. In addition, they focus on the threats and opportunities that may arise from governmental regulation and suppliers' side.

CSR managers communicate the rules about the shipping industry with local and foreign governments and regularly share this information with employees. It is important that everyone be aware of the regulations because the company's ships operate in more than eleven European countries. The CSR managers meet employees regularly to discuss, control, and avoid the risk of breaking rules related to release of harmful emissions such as sulphur, nitrogen and other toxic substances from ferries and ships.



To avoid risks and exploit opportunities related to suppliers' relationship, CSR managers adopt a cautious and compromising strategy. Since suppliers are also competitors and customers for the company, CSR managers need to be aware of their CSR status (rules, requirements, standards) regarding products, services and agreements. This needs to be compared with the CSR rules and avoid risks and create a safe and responsible environment there welcoming the opportunities. To increase competitive advantage, gain market opportunities and build a safer trade-off, Company X has signed ISO agreements such as ISO 50001 that supports organizations to use energy in a more efficient way by developing energy management systems.

#### *4.5.1. The role(s) of IT in supporting interactive control systems*

Associated with the risks and opportunities that may arise from suppliers, government, and competitors, respondents did not provide much information about how IT facilitates CSR managers to handle such issues. Instead, they said that IT enables them to access and collect data and information that are essential for managing CSR activities. They add that IT helps them to prepare reports, both regular and annual reports of CSR activities. However, as the respondents mentioned, the IT systems in Company X are not integrated solutions. Therefore, CSR managers must be aware of the systems they use, data they collect, and the purpose. It is noted that Company X's IT systems are not compatible with some activities associated with collection such as garbage handling and electricity terminals; therefore, managers must collect the data and prepare reports on such activities manually. Below is a brief report on respondents' feedback.

*'Obviously, the IT systems that we have support us, but it could create more benefits for us if we could achieve all information from one system, one integrated system, not obtaining data and information from a lot of different systems. We need to connect all the information that we pick up from different systems. IT helps us to gather data as much as we need. It's just about we must be aware about which system we use and what data we gathered and for which purpose. However, there are a lot of other parts that should be reported manually like garbage handling, electricity at terminals and so on. Currently, the company's IT system is not capable of handling these issues'.*

(Environmental Manager & Head of Sustainability)

How Company X uses interactive control systems to manage CSR strategy	
Purpose	Handle risks and opportunities that may arise from government regulations and suppliers; at the same time, handle the relationship with suppliers who are both competitors and customers at the same.
How leveraged	Engaging regularly in dialogue with technical operation managers and other employees, following and sharing the shipping industry rules and regulations with employees, meeting employees regularly to discuss, control, and avoid the risk of breaking the rules, adopting a cautious and compromising strategy in a relationship with suppliers, and signing different ISO agreements such as ISO 50001.
Example of MCS used	ISO agreements, regular meetings between CSR managers, operational managers, and employees.
The role(s) of IT in supporting interactive control systems for managing CSR strategy	
Role(s):	Respondents did not provide much information in this regard, merely mentioned IT as a reporting system.
How leveraged:	Access to data and information and collecting relevant data and information.

**Table 4. 5 Summary of the use of interactive control systems and roles of IT for managing CSR**

#### **4.6. Company B**

Company B is a leading manufacturer of transport solutions, but also construction equipment, and marine and industrial engines. The company's vision is to be the most desired provider of transport solutions. Likewise, the company's mission is to create prosperity through transport solutions. The company's CSR strategy builds on the standards of the UN Sustainability Global Compact<sup>7</sup> and contributes towards sustainable transport, shared value creation, and responsible business. Also, from a global perspective, the CSR strategy links to the UN Sustainable Development Goals<sup>8</sup>.

Company B defines its CSR objectives within the ambit of the following areas 'good health and well-being', 'innovation and infrastructure', 'sustainable cities and societies', and 'protect the planet'. The company contributes actively to the economic, environmental, and social aspects of CSR through these areas.

The company has a focus on product quality when considering the impact of their products on the environment and society. The company's products impact the environment and people's health and safety. Thus, the company aims to provide energy efficient transport and infrastructure solutions and simultaneously respond to customers' requirements. The solution strategy is constructed on delivering cleaner and more efficient energy, and secure, safe, and automatic operators, and smarter transport products and services. Customers' achievements and stakeholders' perspective are equally important for the company's profitability. Hence, by focusing on customers and stakeholders, the company ensures financial strength and invests in innovative and sustainable development. Table 4.6 below shows the defined areas and objectives of Company B's CSR strategy.

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<sup>7</sup> <https://www.unglobalcompact.org>

<sup>8</sup> <https://www.unglobalcompact.org/sdgs>

Aspect of CSR	Areas	Objectives	Status
Economic	Innovation and infrastructure	- Smarter and wide-ranging transport solutions for products and services.	On track In process
Societal	Good health and well-being  Sustainable cities and societies	-Secure, safe and automatic operators - Reducing global deaths and injuries from traffic accidents. - Reducing the adverse environmental impact per head of cities. - Paying special attention to air quality and municipal waste handling	On track On track
Environmental	Protect the planet	- Take instant action to combat climate change and its consequences	On track

Table 4. 6 Areas and objectives of CSR strategy, Company B

#### 4.7. The roles of belief control systems in managing CSR

Company B uses belief controls to measure the short- and long-term performance of CSR activities and create and expand a shared vision and understanding of the CSR strategy and objectives. The company's short-term performance target is defined within three years and divided into details for the different CSR areas. By contrast, the long-term performance target is conceptual focusing on striving to be the leader of sustainable transporting and being at the forefront of combating climate change. Moreover, it is seen that CSR managers provide and launch a specific game, the game programme focuses on the key elements of the CSR strategy of the company. The game is designed to place employees in different economic, environmental, and social scenarios and situations and expects them to act and respond. Both employees and subordinates play the game and learn to respond to CSR criteria suitably and perceive the CSR requirements easier. In addition, CSR managers also provide employees with education and training sessions to engage them in CSR activities and teach them about the underlying ideas of the company's CSR strategy. In this regard, the study respondents mentioned the following:

*'We receive very good results after launching the game, as both employees and managers play the game and we think this is an effective idea for engaging, and simultaneously educating all employees about the core values of CSR strategy'.*

(Director, External CSR Management & Director Environmental Affairs)

##### 4.7.1. The role(s) of IT in supporting belief control systems

At the time of collecting the empirical data for this study, the company's IT system was under development. The respondents mentioned as follows in this regard:

*'We are working on our IT system and want to implement an advanced system, which can support us efficiently regarding the CSR/sustainability issues. However, currently we use very basic IT tools such as Intranet, websites, Internet, SharePoint, videos, Skype, and PowerPoint'.*

(Director, External CSR Management & Director Environmental Affairs)

The respondents note that despite the lack of having an integrated IT system, the game programme explained above and other IT applications such as intranet, websites, graphs, and video conferencing help to reinforce the CSR strategy and objectives. They state that the game programme helped them in engaging with more employees in CSR strategy activities. The respondents also mention that the game programme supports and enables them to put employees in a virtual situation where they respond and understand the different requirements and criteria of CSR initiatives. The game programme visualizes various scenarios of CSR prerequisites from different departments such as sales, canteens, and manufacturing, and the game requests employees to respond to the CSR questions and criteria appropriately.

How Company B uses belief control systems to manage CSR strategy	
Purpose	To determine the short- and long-term performance of the CSR strategy objectives, create and expand a shared vision of the CSR strategy objectives, engage employees in CSR activities, and understand the logic underlying the CSR strategy objectives.
How leveraged	By trying to achieve the short-and long-term performance targets, the use of CSR game programme that teaches the core values of CSR strategy.
Example of MCS	Education and training sessions
The role(s) of IT in supporting belief control systems for managing CSR strategy	
Role(s)	Visualizing and transmitting data and information regarding CSR activities
How leveraged	Intranet, websites, graphs, video conferencing, and the CSR game programme

**Table 4. 7 Summary of the use of belief control systems and roles of IT for managing CSR**

#### ***4.8. The roles of boundary control systems in managing CSR***

Company B describes explicitly business values and principles through boundary controls to both internal and external stakeholders. The values and principles are collected in the business code of conduct and the company policy regarding environmental requirements. The respondents mentioned that the company's business code of conduct is very strict in relation to

suppliers and the purchasing department. Managers responsible for implementing the CSR strategy check and monitor suppliers' CSR work rigorously. They screen every supplier to ensure there is no difference between the company's and suppliers' CSR principles. If they recognize differences, they reconsider the trade-off to ensure that is ethically correct. The trade-off may be legal but not ethical; however, the company eliminates the risks and ensures that it does not have any negative impact on society and the environment.

*4.8.1. The role(s) of IT in supporting boundary control systems*

The respondents note that the intranet and company website create easy access to the company's code of conduct. They added that CSR managers receive support from two system software call 'data management system'(DMS) and 'SharePoint' to create reports from audited results for both internal and external purposes. The respondents postponed additional clarification regarding these issues and mentioned as follows:

*'[...] that is why we want to change our IT system, we want to improve such issues, to create better communication facilities for our employees, customers and suppliers regarding CSR and CSR boundaries. Presently, data management system (DMS) and an internal IT tool called SharePoint support us with collecting data, analysing, and reporting systems. We also use excel for analysing data'.*

(Director, External CSR Management & Director Environmental Affairs)

How Company B uses boundary control systems to manage CSR strategy	
Purpose	To describe explicitly business values and principles to both internal and external relationships
How leveraged	Code of conduct for both suppliers and the purchasing. Through following up and checking suppliers' CSR criteria rigorously, screening every supplier
Example of MCS	Code of conduct and company policy regarding environmental requirements
The role(s) of IT in supporting boundary control systems for managing CSR strategy	
Role(s)	Accessibility and creating ease of use for the company's code of conduct, creating internal and external reports
How leveraged	Intranet, website. DMS, SharePoint

**Table 4. 8 Summary of the use of boundary control systems and roles of IT for managing CSR**

#### ***4.9. The roles of diagnostic control systems in managing CSR***

Company B uses diagnostic control systems to manage its CSR strategy as follows:

- Budgeting
- Decision making about the CSR strategy
- Follow up CSR performance

##### ***Budgeting***

Company B has three departments that focus on distinct aspect of CSR means economic, social, and environmental. The company allocates a certain amount of budget to each department for CSR activities, but none of the CSR aspects are prioritized in this budget. However, there are some exceptions that are always prioritized such as emergencies or natural disasters, nevertheless. This does however not mean that the company has a formal budget for such extreme situations, but rather that make sure that there are resources at the company level that can be used if needed.

##### ***Decision making about the CSR strategy***

The group management decides about the objectives of the company's CSR strategy and relevant activities. The CSR department receives a certain amount as annual budget. The CSR managers decide and allocate the budget for various activities. For example, they plan projects, travel, and conduct conferences associated with CSR, and prepare annual reports and other relevant activities associated with CSR.

##### ***Follow up CSR performance***

To follow up on the CSR performance and ensure that activities are on track, CSR managers monitor the activities through local reports and an annual follow up globally. Also, CSR managers check about 70 different reports received from CSR activities and ensure that the activities are on track. Regarding the global annual follow up, CSR departments ask their colleagues worldwide to report their CSR activities for the relevant year including name, partners, and the amount they spent for implementing CSR activities. Subsequently, CSR departments complete the reports and an analyse to ascertain which activities have been conducted and the scope for improvement.

##### ***4.9.1. The role(s) of IT in supporting diagnostic control systems***

As previously noted, the company does not have an integrated IT system. However, the process of developing an IT system is underway.

During the period the data were collected, the company used the following system software and application software to manage its CSR strategy. These systems are explained subsequently.

- Process Management Systems (PMS), and Environmental Performance Systems (EPS)
- Microsoft Word, Excel, and Microsoft SharePoint

The Process Management Systems (PMS) and Environmental Performance Systems (EPS) formats are used for mapping, monitoring, collecting and analysing data and information regarding CSR activities. The PMS enables CSR managers to follow up and map the activities while EPS facilitates the measurement and analysis of data and information. These systems also support CSR managers to create reports about the various CSR activities.

Managers also use application software such as Microsoft Word, Excel, and Microsoft SharePoint to manage CSR activities. Microsoft SharePoint shares and stores data and information regarding various CSR activities. In addition, it is used as a database for suppliers' information. Microsoft SharePoint maps out the CSR activities implemented by the company worldwide.

How Company B uses diagnostic control systems to manage CSR strategy	
Purpose	Allocate resources and prioritize emergency situations, and follow up on CSR performance
How leveraged	Allocating a certain amount of budget to CSR departments, follow up on CSR performance through reports (e.g. checking out 70 reports regarding various CSR activities) local and annual follow up globally
Example of MCS	Budgets, and reporting system
The role(s) of IT in supporting diagnostic control systems for managing CSR strategy	
Role(s)	Mapping, monitoring, collecting, analyzing, sharing, and storing data and information
How leveraged	PMS and EPS systems, Microsoft Word, Excel, and Microsoft SharePoint

Table 4. 9 Summary of the use of diagnostic control systems and roles of IT for managing CSR

#### **4.10. The roles of interactive control systems in managing CSR**

Company B has a dynamic and interactive relationship with external stakeholders to identify the risks and achieve opportunities related to the relationship with these groups. The respondents did not provide the author detailed information regarding how CSR managers stimulate and guide the opportunities and threats associated with the relationship between



stakeholders and the company's CSR strategy. However, the company's reports and documents have been used to answer this issue.

To achieve opportunities associated with CSR activities and gain competitive advantage for the company, CSR managers invest on different projects. To do this, CSR managers have invested in a project in three African countries. The project is designed to create technical training for unemployed young people in Africa. Thus, the project benefits society through creating jobs and providing education to young people, and simultaneously creates competitive advantage (e.g. reputation and brand values) and improves further opportunities for the company. The respondents argue that unskilled labour make losses for the company, therefore, they educate mechanics and technicians to ensure that the products are accepted well in Africa (avoid the risk of loss).

In fact, CSR managers have an ongoing dialogue and communication with the production division to avoid the risks associated with the company's products. They check ISO standards (e.g. ISO 9001, 14001, and 50001) and certificates of products. The CSR managers engage interactively in decision-making activities in the production division to check product quality in terms of standards and certificates and respond to customers' requirements thoroughly. The respondents also mentioned that customers' feedback is important for creating an innovation culture and improving products.

The CSR managers provide education to employees to manage the risks and opportunities that emerge from supplier relationships. Suppliers are important for the company because they are expected to provide high-quality products and services from design to delivery processes. Along with employees, CSR managers pursue suppliers' standards and requirements regarding chemicals and hazardous substances (e.g. checking EU requirements and REACH<sup>9</sup>). To avoid any risks related to the company's code of conduct, CSR managers communicate these issues continually with subordinates to check suppliers' code of conduct including societal responsibility, job environment and conditions, human and trade union rights, environmental care, and business ethics. The company shows that during 2015, 86% of products (components) corresponding to 79% (72) in value fulfilled CSR requirements. This is significant because suppliers are ranked based on their CSR-risk perspective.

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<sup>9</sup> REACH means Registration, Evaluation, Authorization, and Restriction of Chemicals.

#### 4.10.1. The role(s) of IT in supporting interactive control systems

The respondents did not provide the author much information about the role(s) of IT in supporting interactive controls to manage the company's CSR strategy.

How Company B uses interactive control systems to manage CSR strategy	
Purpose	Stimulate and guide the opportunities and threats, identify the risks and achieve opportunities associated with the relationship between stakeholders and the CSR strategy
How leveraged	Through different projects that create competitive advantage and welcome further opportunities, such as brand value and reputation, creation of jobs and education opportunities for young people in deprived countries, avoid the risk of loss by training mechanics and technicians, have ongoing dialogue and communication with the production division regarding suppliers to check compliance with CSR standards, including ISO certificates, suppliers' code of conduct, and suppliers' standards and requirements regarding chemicals and hazardous substances.
Example of MCS	Project evaluation, pursuing suppliers' condition like checking standards and requirements such as ISO certificates, ongoing discussions and meetings
The role(s) of IT in supporting interactive control systems for managing CSR strategy	
Role(s)	Did not receive information about this issue
How leveraged	-

**Table 4. 10 Summary of the use of interactive control systems and roles of IT for managing CSR**

#### ***4.11. Company Z***

Company Z is a pioneer technology leader in the field of power and automation. The company has a leadership position in innovative digital connections, which creates facilities for equipment and systems of various industries. The company delivers solutions that increase efficiency, safety and productivity in utilities, transport, and infrastructure.

Notably, CSR values are embedded in the company's business strategy and contributes to how the company designs and manufactures products, including how it operates and interacts with stakeholders to assess the potential risks and opportunities in such relationships. The company's CSR strategy builds on the objectives that represent the company's business strategy and values. The CSR strategy objectives involve environmental and social aspects, including human rights and health and safety issues. (see Table 4.11). The company notes that progress towards these objectives is created at all organizational levels of the business. Company Z is a member of the United Nations Global Compact and has implemented the UN guiding principles on business and human rights and has used the recommendations to evaluate expectations of corporate behaviour. All the company's organizational units are encouraged to implement management systems regarding environmental, health and safety, and quality issues, whereas the manufacturing and service units are obligated to implement these systems. Globally, the company has achieved external certification for environmental management systems at 418 sites and offices and certifications for health and safety management systems at 421 locations.

With respect to what has been mentioned above, the company highlights specific areas and defines some objectives underlying them to contribute towards further improvement in the environmental and social conditions (see Table 4.11). The company contributes to environmental issues through providing energy efficiency products and by offering customers systems and solutions that consume lower energy and cut emissions. Likewise, the company contributes to social issues through creating jobs and recruitment, paying taxes to governments, training and educating stakeholders, employees, and suppliers.

Aspect of CSR	Areas	Objectives	Status
Economical	Products and services, including innovations and achievements,	- 20% revenue increase from energy efficiency-related products, systems, and services -Qualitative assessment of technology contribution to environment, profit, and society -Number of R&D engineers trained in health, safety and environment (HSE) checklist	In process
	Integrity	-100% employees trained in integrity issues and processes -Monitoring of reporting channels, investigation, remediation and survey results -Proactive and regular communication	On track
	Right materials	-Reduce amount and type of hazardous substances used/emitted -Compliance with EU REACH (registration, evaluation, authorization and restriction of chemicals)	In process On track
Societal	People and society	-Employee engagement score -The company's community engagement tool implemented in major represents of company in other countries	In process On track
	Human rights	-Network of sustainability employees trained in human rights by 2016 (projects) - 600 managers trained by end of 2016 (e-learning)	Achieved On track
	Safe and secure operations	-Safety Observation Tour (SOT) rate=1.2 per employee, run rate 180,000 -Hazard reporting rate= 2 per employee, run rate 300,000	On track On track
	Responsible sourcing	-Number of suppliers assessed (internal/by third party) -Total number of risks identified and mitigated	In process In process
Environmental	Energy efficiency and climate change	- 20% decrease in energy intensity per \$ sales from 2013 (megawatt hours/million \$ sales)	Not on track
	Resource efficiency	-Cut water consumption by 25% in water scarce/water stressed areas -Reduce waste sent for final disposal by 20%	In process In process

Table 4. 11 Areas and objectives of CSR strategy, Company Z

#### 4.12. The roles of belief control systems in managing CSR

The company's CSR strategy aligns with the business strategy and supports the objectives and activities that influence the value chain. The company uses beliefs systems to specify the short- and long-term performance of its CSR strategy objectives. Generally, short-term performance aims to result in long-term performance. Long-term performance aims to achieve within five years, while short-term performance determines within one to three years. The company short-term performance target divided into details for the different CSR areas are displayed in Table

4.11. The long-term performance target focuses on being perceived as the world's leading supplier of innovation, safety, resource efficiency products and services.

The company's CSR managers employ beliefs mechanisms to inspire commitment and create shared values around the CSR strategy objectives among employees. Besides, these controls are used to encourage employees searching for new opportunities and innovation in CSR activities. To engage, inspire, and ensure that employees have realized the CSR strategy objectives correctly, CSR managers differentiate and create additional effort in the CSR aspects in different countries. For example, in some countries, issues regarding human rights are more relevant than other countries. Therefore, CSR managers strive to create a balance in these issues in some countries; they try to build an environment where all the employees have equal rights and perceive the core message of CSR and engage and contribute to relevant activities. In addition, the company emphasises on security and integrity of the workplace in its Swedish facility and holds many workshops, campaigns, and educational programmes to inspire and engage employees in contributing to these issues.

Likewise, CSR managers provide local and global programmes to encourage and engage as many employees as possible in the relevant activities. Locally, they run many workshops and provides a programme called '*Business development*' to discuss the focused areas of the CSR strategy every week. This programme and these workshops create opportunities and encourage employees to suggest solutions and discuss new ideas regarding the focused activities. They use another programme called '*Energy saving pumps*' to inspire saving energy by choosing effectively between transportation alternatives.

Regarding global engagement, CSR managers employ various programmes (e.g. the programmes '*Competency model*' and '*White-collar productivity*'). They roll out new balanced scorecard processes to strengthen performance orientation, hold two-part training courses to build the required capacity for human rights networks, and provide education and training programmes within each CSR area to ensure and involve employees globally in achieving the CSR strategy objectives.

#### *4.12.1. The role(s) of IT in supporting belief control systems*

'Decathlon' is the IT application that is used to engage employees in CSR activities and create the opportunity for them to seek and contribute to innovation and development of these activities. Decathlon facilitates visualization of statistical data and information and allows users to access the relevant dashboards and navigate them to other applications for detailed analysis

in various contexts. It creates ease of access to data and information through various applications such as energy monitoring and production analysis applications. Decathlon creates ease of use for both internal and external users in terms of configuration of data and information. Moreover, it creates a flow of communication to multiple users so that they can collaborate and share knowledge regarding CSR objectives and activities. The respondents described briefly as follows in this regard:

*'IT supports us of course. IT systems are needed for working efficiently at any level of the organization, not only regarding CSR. If we didn't have the support from IT systems, of course we couldn't follow the business operations' processes, and also couldn't see how we are doing in terms of progress of these processes. We use our intranet and website to communicate with our customers, for example we use diagrams, curves and other tools to show information on CSR performance'.* (Head of Sustainability)

How Company Z uses belief control systems to manage CSR strategy	
Purpose	To specify the short- and long-term performance of CSR strategy objectives, inspire commitment to CSR activities and create shared values of CSR strategy objectives, and encourage employees searching for opportunities.
How leveraged	Defined time periods for short- and long-term performance (e.g. 1–3 years for short-term performance and 2020 for long-term performance), create further commitment of employees by focusing on specific areas and activities locally and globally, running workshops, campaigns, and education programmes, using programs for global engagement of employees, roll out the balanced scorecard process, and two-part training courses.
Example of MCS	Training and educational courses and programmes, designed workshops and campaigns, and balanced scorecard process improvement
The role(s) of IT in supporting belief control systems for managing CSR strategy	
Role(s)	Visualization, create ease of use and access, flow of communication
How leveraged	Through application software such as an intranet, website, and Decathlon and its related applications

Table 4. 12 Summary of the use of belief control systems and roles of IT for managing CSR

#### 4.13. The roles of boundary control systems in managing CSR

The company uses boundary controls to describe and highlight the principles and policies of the business strategy throughout the company. The business relationships and expectations regarding the CSR strategy are described through the code of conduct, suppliers' code of conduct, and the company's integrity programme. The company's code of conduct and supplier code of conduct emphasise a set of internal standards and policies. The policies include prohibition of facilitation payments, zero tolerance for any involvement in bribery or

corruption, forceful policies on gifts, entertainment, and expenses. The integrity programme reflects on the importance of individual accountability, oversight integrity leadership, transparency, as well as political and philanthropic contributions, external representatives, and ethical supply chains. The integrity programme operationalizes clearly through the following steps:

- Prevention: educating and empowering employees
- Detection
- Resolution: zero tolerance for violation

**Prevention:** this programme aims to educate and strengthen employees' knowledge about the company's code of conduct. All newly hired employees must complete an online e-learning programme and direct training regarding the code of conduct within three months. This programme is provided for all employees on a two-year cycle. In addition, employees who have a sensitive role will receive specific online and direct training focusing on the subject of specific integrity risk. All agents and representatives involved in performing on behalf of the company must participate in compulsory e-learning or direct integrity training.

**Detection:** this programme conducts initiatives to prevent non-compliant behaviour and detect integrity concerns. The detection programme includes anti-bribery, anti-fraud, and multiple reporting channels such as a whistle-blower and hotline system for both internal employees and external stakeholders. The anti-bribery report that is received from the business units of different countries are reviewed and evaluated by the company's internal auditors. The auditors review the business processes, accounts and balances, and test transactions to check out controls and identify possible violation of the company's anti-bribery procedures. The internal audit monitors the anti-fraud reports regularly. In addition, multiple channels are available to all employees to report integrity concerns, including a multi-lingual business ethics hotline. Multiple channels are available for employees 24 hours a day, seven days a week. Different reporting channels including a stakeholder hotline advertise through a hotline poster campaign, which is available to the company's external business partners.

**Resolution:** a key element of the programme is a rigorous zero tolerance policy for violation of law or the company code of conduct through this programme. The company takes proper disciplinary action including terminating employment for employees who abuse the code of conduct. During 2014 and 2015, more than 97% white-collar employees and approximately

the same number blue-collar employees completed the global anti-bribery programme and direct training regarding the company's code of conduct.

*4.13.1. The role(s) of IT in supporting boundary control systems*

CSR managers use different IT applications such as intranet, website, reporting channels, hotlines, and cloud-based tools to create ease of use and access to rules and principles regarding the CSR strategy and activities for both internal and external stakeholders. An intranet and the company's website both support easy access to the code of conduct. Also, the anti-bribery and anti-fraud programmes make users practice and train in the company's and suppliers' code of conduct and requirements. Reporting channels support users to easily reports of fraud and corruption. The hotlines support employees and other stakeholders to raise their concerns before it turns detrimental. For example, they call on a relevant hotline to report their concerns, a communication specialist prepares the report and forwards it to the integrity office for further review or investigation. Subsequently, the employee or stakeholder is enabled in following up and monitoring the report by using a personal PIN on the system. Also, the cloud-based tool has been implemented for pre-approval of gifts, entertainment, and expenses. This tool enables the company to provide constant review and transparent advice to employees.

How Company Z uses boundary control systems to manage CSR strategy	
Purpose	To explicitly describes and highlight the business relationships of CSR strategy objectives and activities from the top leadership to employees and business partners.
How leveraged	Through the company code of conduct, supplier code of conduct, and company integrity programme (prevention, detection, and resolution), underlying a set of internal standards and policies, such as prohibition of facilitation payments, zero tolerance for any involvement in bribery or corruption, forceful policies on gifts, internal audit, and checking transactions
Example of MCS	Meetings and training, programmes, providing boundaries and guidelines on approved activities like code of conduct, standards and policies, and auditing
The role(s) of IT in supporting boundary control systems for managing CSR strategy	
Role(s)	To create ease of use, report, and access to rules and principles regarding CSR business relationships and activities for both internal and external stakeholders
How leveraged	Through IT applications, such as intranet, website, programmes, reporting channels, hotlines, and cloud-based tools

**Table 4. 13 Summary of the use of boundary control systems and roles of IT for managing CSR**



#### ***4.14. The roles of diagnostic control systems in managing CSR***

Company Z employs diagnostic controls to manage CSR strategy as follows:

- Budgeting
- Decision making about the CSR strategy
- Follow up CSR performance (see Table 4.14)

##### ***Budgeting***

To manage CSR activities, the budget is divided into global and local forms. The global budget uses international initiatives or interests such as reporting systems or education programmes. The local budget operates for different purposes, focusing on the development of projects and programmes such as an enhanced IT system that creates control over chemical materials or improves the security systems. In addition, the local budget allocates the operating department resources for required licenses, purchase of land and property, and purification process. Likewise, the local budget assigns the resources for prioritized activities within the environmental and societal areas. For example, the prioritized activities within the environmental area include reduction of chemical subjects, production of cleaner products, examination of energy consumption sources, measuring, analysing, and establishing a plan to reduce water use, identifying areas where generation of waste can be reduced. The prioritized activities within the societal area relate to the workplace environment, working hours and labour reports, and improvement of learning and education.

##### ***Decision making about the CSR strategy***

The sustainability board, including the executive committee, reviews the development of CSR strategy objectives and monitors progress. The board reviews the CSR strategy objectives and confirms the proposed activities/areas and performance metrics for the upcoming year. The board also monitors and reviews progress towards objectives versus expectations in order to initiate actions and conduct better forecasting of future performance. Regarding CSR global issues, governmental agency proposals sent to the company are handled by group management which then send their recommendation/proposal for action to the executive committee for a final decision. Concerning local CSR issues, the sustainability department along with the group management proposes suggestions and requirements and sends them to the executive committee for a final decision.

### *Follow up CSR performance*

Table 4.14 explains how CSR managers follow up on performance. They employ various ways to ensure that CSR activities pursue the objectives and perform efficiently. Table 4.14 provides information on the mechanisms deployed to ensure that CSR activities perform in accordance with plans.

Aspect of CSR	Areas	Follow up the performance of CSR and ensure that the activities are on track
Economical	Products and services, including innovations and achievements	Update material selection guidelines - review and control the health, safety, and environment (HSE) checklists for research and development (R&D) Establish sustainability networks for global research centres to share good practices and achievement related to CSR activities.
	Integrity	Update anti-bribery training material through campaigns Piloting new global pre-approved tools for gifts, entertainment, and expenses to improve transparency, and review the process
	Right materials.	Conducting 13 training sessions on different aspects of REACH regulation, including legal requirements on material compliance Running 24 projects to reduce hazardous substances, assessment of applicability of products in each division.
Societal	People and society	Using the competency model - reviewing rigorous people and succession planning process - assessing reports on social activities from different countries
	Human rights	Training managers - carrying out several projects in Europe, south-east Asia and South America
	Safe and secure operations	Analyzing hazards, incidents reports, certifying OHS management system at 421 locations Holding 22 face-to face country management crisis training courses
	Responsible sourcing	Assessing risks areas and mitigating risks (e.g. 441 risks areas assessed, and 311 risks mitigated) Formally assessing suppliers, assessing suppliers' qualification and classification process
Environmental	Energy efficiency and climate change	Analyzing energy saving activities by catching up on decreasing revenues and lower capacity utilization in some areas Using formal energy management systems with 47 certified to ISO 50001 or EN 16247, Renewable electricity sources
	Resource efficiency	Establishing plans with milestones to increase the share of waste reused or recycling, water saving through recycling and reusing Follow up on recycling and waste reduction projects

**Table 4. 14 Measures of CSR performance**

#### *4.14.1. The role(s) of IT in supporting diagnostic control systems*

As is mentioned earlier, Company Z is a large global industry that uses many different application software and system software to manage its CSR strategy. The company uses a distributed control system (DCS), which is a large system software. This system includes many application software to help and facilitate managers and employees in various tasks. Some of these applications are explained as follows.

- Chem Soft is used to follow up and recognize chemical subjects, and measure energy and water consumption
- System 800xA Health Check is used to monitor health and safety issues
- Teknikföretagens Informationssystem om Arbetsmiljö (TIA) and Corporate Sustainability Software Package (SOFI) are used to analyse data and information for internal and external reporting purpose
- Decathlon is used to analyse, store, and manage large amounts of data and information

Chem Soft is an application that is designed to follow up and recognize chemical subjects under the purchasing process. When the system recognizes chemical content, it shows a red line and interrupts the purchasing process. This tool is also capable of measuring energy and water consumption.

System 800xA Health Check is used to monitor the health and safety issues. The system identifies underperforming areas and provides corrective and protective recommendations to recover and improve system performance and efficiency. Also, this system is a key service to support accessibility and avoid disruptions and interruptions in production.

Teknikföretagens Informationssystem om Arbetsmiljö (TIA) and Corporate Sustainability Software Package (SOFI) are two applications that are designed to facilitate analysis of environmental data and information and reporting of environmental parameters such as chemical subjects, energy, and water consumption. The TIA supports CSR managers for internal purposes such as analysing and preparing reports on internal data related to environmental issues. Whereas, SOFI supports external purposes such as reporting of global incidents, health and safety issues, and following up on risk areas.

Decathlon is also another application that manages and customizes a large amount of industrial data and information. This software includes four modules that aim to examine and analyse data, create reports, connect to control systems, and store historical data. These four

modules enable CSR managers to select relevant data and information for CSR strategy purposes.

How Company Z uses diagnostic controls systems to manage CSR strategy	
Purpose	To allocate resources for local and global CSR strategy purposes, follow up on CSR activities performance
How leveraged	Budget allocation and prioritizing activities such as reduction of chemical subjects and production of cleaner products
Example of MCS	Budgeting, projects and programmes for ensuring that CSR activities are on track (see Table 4.14)
The role(s) of IT in supporting diagnostic control systems for managing CSR strategy	
Role(s)	Following up and recognizing chemical subjects, measuring energy and water consumption, monitoring health and safety issues, analyzing data and information for reporting purpose, storing and managing large amounts of data
How leveraged	Through application software such as Chem Soft, System 800xA Health Check, TIA and SOFI, and Decathlon

Table 4. 15 Summary of the use of diagnostic control systems and roles of IT for managing CSR

#### **4.15. The roles of interactive control systems in managing CSR**

Managers that engage in CSR activities employ interactive control systems primarily to manage strategic uncertainties. For this reason, they engage in decision activities of employees interactively. The respondents mentioned that the CSR strategy evolves gradually in their company. Therefore, they attempt to focus on the relevant risks and opportunities and discuss these issues with employees regularly. The respondent notes that the focus on CSR issues has progressed from environmental issues, product quality, and finally to lifestyle and products influences. This requires dynamic and active relations with both internal and external stakeholders. The respondent adds that they put a lot of effort to avoid external pressure regarding their products, and they standardize the products through environmental product declaration (EPD). In addition, CSR managers have regular dialogues with subordinates regarding the risks that may emerge from suppliers. They require the operations division to investigate the source of raw materials, components, and services. Furthermore, they select ‘best-in-class’ suppliers that follow the standards of products, operational excellence, business ethics, and social and environmental responsibilities. The company has implemented a programme called ‘supplier sustainability development’. This programme supports the performance improvement of selected suppliers and creates values for them, their employees, and their local community. Thus, by controlling the product materials and suppliers’ standards,

the company reduces the risks involved in this regard and increases brand reputation through considerations of legal, strategic, environmental, and health and safety requirements. Also, CSR managers encourage employees to engage in ongoing dialogues with customers, external expertise, and other organizations and authorities to seek opportunities and respond to innovative advantages.

#### *4.15.1. The role(s) of IT in supporting interactive control systems*

The respondent did not provide information on how IT facilitates interactive controls to manage the company's CSR strategy. Therefore, the company documents and website were used to answer this part. The company resources point to IT applications software and mobile applications for external communications. Through these facilities, the company creates the opportunity to increase reliability, innovation, and ease of use in various ways to data and information for external users such as customers. The IT applications are explained as follows:

'Internet of Things, Service, and People' (IoTSP) is an application designed to facilitate interconnection between things, services, and people through the Internet. It improves data analysis, boosts productivity, increases reliability, saves energy and costs, and generates new opportunities through innovative business models. This application allows the company to offer new service requirements to customers. In addition, the application enables customers to analyse their data more intelligently and optimize operations through increased accessibility to industries, utilities, and infrastructure.

'EnergySave' is a user-friendly and interactive energy saving application. It calculates how much energy and money users save through the company's drives. The application can compare AC drive control against traditional flow control methods in different applications such as pumps, fans, and compressors. The application covers two modes – the basic and the advanced modes. The basic mode creates quick visibility for users regarding energy saving. The advanced mode requires details of technical information from users for more specific calculation.

'Drivetune' is also an application that establishes connectivity with users. This means that users do not need to enter the hazardous or difficult-to-reach work areas to access information. This application helps them to employ and calibrate a drive.

'Drivebase' is an application that provides customers an easy access to product manuals and contacts. This application enables users to report a service action and receive recommendations. The customers can receive information regarding troubleshooting and register that to get an additional warranty.

‘Voice-operated smart home automation system’ allows users to control over 60 smart-home automation functions such as lighting, heating, blind control, and door communication.

‘Ellipse Select’ is another application that helps customers to manage assets effectively through the life cycle and make a better operational decisions, performance, and productivity.

How Company Z uses interactive control systems to manage CSR strategy	
Purpose	To manage risks and opportunities (uncertainties) related to CSR strategy
How leveraged	Interactively engaging in the decision activities of employees, discussing issues with employees regularly, avoiding external pressure about products through standardizing and using the environmental product declaration (EPD) system, regular dialogues with subordinates regarding the risks that may emerge from suppliers, requiring the operation division to investigate the raw materials source, components, and services, selecting ‘best-in-class’ suppliers, implementing the ‘Supplier Sustainability Development’ programme, controlling the product material and suppliers’ standards, encouraging employees to have an ongoing dialogue with customers, external expertise, and other organizations and authorities
Example of MCS	Ongoing dialogue between CSR managers and employees like the operations division, standardizing and using programmes like EPD and SSD programmes
The role(s) of IT in supporting interactive control systems for managing CSR strategy	
Role(s)	Creates interactions between things, services, and people, creates ease of use for external users like customers, calculator for energy saving, connectivity/accessibility to services and information, and automating functions such as lighting and heating
How leveraged	Using IT applications such as LoTSP, EnergySave, Drivetune and Drivebase Voice operated systems, and ‘Ellipse Select’

**Table 4. 16 Summary of the use of interactive control systems and roles of IT for managing CSR**

## 5. ANALYSIS

This chapter provides a discussion of the empirical findings of companies X, B, and Z, and it seeks to answer the research question *What are the roles of IT in supporting management control systems for implementing CSR strategy?* The chapter is structured as follows:

First, the role of the LoC framework in managing the company's CSR strategy are discussed (see Figure 5.1).

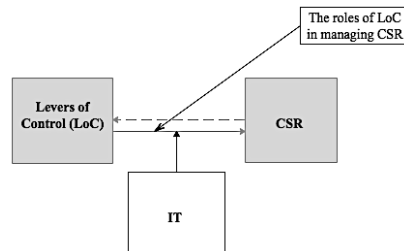


Figure 5.1 Role of LoC in managing CSR

Second, the role(s) of IT in supporting management control for CSR strategy is discussed (see Figure 5.2). It provides a description of the roles of IT in supporting each lever of the control namely belief, boundary, diagnostic, and interactive controls for managing CSR strategy. A compression of the roles of IT in the studied companies X, B, and Z is also provided.

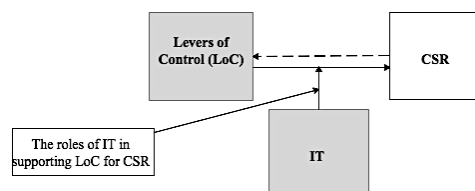


Figure 5.2 Role of IT in supporting LoC for CSR

### 5.1. Summary of empirical findings

Table 5.1 provides a summary of the empirical findings of this study. The Table is organized in two parts. The first part includes three phases: 1) the purpose of using each lever of control for managing CSR strategy, 2) how MCS mechanisms are used to achieve these purposes, and 3) examples of the MCS mechanisms that are used to manage CSR strategy. The second part also comprises three phases: 1) the purpose of using IT for supporting MCS for managing CSR strategy, 2) how IT systems/applications are used to achieve these purposes, and 3) examples of how the MCS receive support from IT to manage CSR strategy.

### Role of Levers of Control (LoC)

<b>Belief control systems</b>	<b>Boundary control systems</b>	<b>Diagnostic control systems</b>	<b>Interactive control systems</b>
Reinforcing and stabilizing the key message of CSR.	Identifying and managing threats.	Managing the performance of CSR critical activities.	Managing strategic uncertainties
Purposes of Companies X, B, and Z: reinforce the short- and long-term values of CSR, and create a shared vision of CSR, also inspire and engage employees for searching new opportunities.	Purposes of Companies X, B, and Z: address and set boundaries around CSR strategic objectives, explain clearly the internal and external relationships with stakeholders, and manage opportunities (what is acceptable) and potential risks (what is not acceptable) associated with CSR strategy.	Purposes of Companies X, B, and Z: plan activities and processes associated with CSR, focus on decision-making in the CSR strategy and ensure that the objectives are met, measure and follow up the performance of CSR critical activities, create motivation for creativity and support innovative behaviours, and determine which CSR activities need to be improved and prioritized.	Purposes of Companies X, B, and Z: manage relationships around CSR with stakeholders, particularly external stakeholder such as government, suppliers, and customers; manage risks associated with CSR, and identify opportunities for creating further innovation related to CSR activities.
How company X, B, and Z leverage these purposes: through MCS mechanisms (see below).	How company X, B, and Z leverage these purposes: formal mechanisms such as code of conduct, internal programmes like boundaries around suppliers, and purchasing departments, regularizing and determining suitable and unsuitable areas for CSR, and integrity programmes, internal auditing.	How company X, B, and Z leverage these purposes: through budget planning, meetings, projects, reports analysis consultations, and data analysis and measurement processes from different units of the organisation such as the operational unit.	How company X, B, and Z leverage these purposes: formal and regular meetings, debates, and discussions with both internal and external stakeholders, signing agreements such as ISO certifications and projects.
Examples of MCS used by company X, B, and Z: communication tools such as internal newspapers, intranet, regulatory CSR games, workshops, education programmes and training sessions, and campaigns.	Examples of MCS used by company X, B, and Z: codes of conduct, guidelines on approved activities, suppliers' code of conduct, monitoring suppliers' integrity programme, standards and policies, internal auditing, anti-bribery or corruption programmes, trainees' education and internal programmes through an intranet.	Examples of MCS used: Company X: budgets, incentives programmes, standard checklist, consultations, and reports. Company B: budgets, projects, travel and conferences related to CSR, annual audit reports, and checking CSR reports Company Z: budgets and meetings, review and control, health, safety, and environmental (HSE) checklist, training managers for carrying out projects, analysing hazards and incidents reports.	Examples of MCS used: Company X: regular meetings and discussions around the CSR strategy of EU and Baltic commission, ISO agreements. Company B: projects, dialogues and communication by production division and suppliers, standards around CSR, launching education programmes, inscribing different ISO agreements. Company Z: regular dialogues and discussion between CSR and employees, standardizing CSR activities; using EPD and SSD programmes.



<b>Role of IT, Belief control systems</b>	<b>Role of IT, Boundary control systems</b>	<b>Role of IT, Diagnostic control systems</b>	<b>Role of IT, Interactive control systems</b>
<p>Purposes:</p> <p>Company X: informate CSR objectives and activities by distributing and visualizing information to as many employees as possible.</p> <p>Automate: (collecting data and information) but not highlighted because of the decentralised organization and non-advanced IT systems.</p> <p>Company B: informate CSR objectives and activities by distributing and visualizing information to as many employees as possible.</p> <p>Automate (collecting data and information) is less highlighted because of the decentralised organization and non-advanced IT systems.</p> <p>Company Z: informate CSR objectives and activities by distributing and visualizing information to as many employees as possible; and automate the collection of internal CSR data and information.</p>	<p>Purposes:</p> <p>Company X: automate such as collecting and accessing internal data and information, and informate boundaries around CSR</p> <p>Company B: automate, collecting and accessing internal data and information, and informate boundaries around CSR</p> <p>Company Z: automate collecting and accessing internal data and information, and informate boundaries around CSR</p>	<p>Purposes:</p> <p>Company X: transformate data and information related to CSR activities such as budget planning and measurement processes, follow up CSR activities to create easier understanding for the performance of CSR critical activities, and informate, automate CSR activity processes.</p> <p>Company B: transformate data and information related to CSR such as budget operational plans, analysing and following up the performance of CSR critical activities, automate internal data collection, and monitoring of processes.</p> <p>Company Z: transformate data and information related to CSR activities such as budget planning, measurement, follow up the performance of CSR critical activities, informate and automate data and processes of CSR activities.</p>	<p>Purposes:</p> <p>Company X: Not much information in this regard</p> <p>Company B: Not much information in this regard</p> <p>Company Z: informate and automate the interactive control mechanisms of CSR activity related to internal and external stakeholder relationships.</p>
<p>How company X, B, and Z leverage these purposes: through their available IT systems and applications.</p>	<p>How company X, B, and Z leverage these purposes: through companies' available IT applications, which create facilities and accessibility to data and information.</p>	<p>How company X, B, and Z leverage these purposes: through various existing IT systems and applications of companies (see examples below).</p>	<p>How company Z leverage these purposes: company Z, several IT systems and mobile applications.</p>
<p>Examples of IT systems used at company X, B, and Z: websites, online programmes, graphs, e-learning, films, and videos.</p>	<p>Examples of IT systems used:</p> <p>Company X: video conferences and company's website.</p> <p>Company B: intranet, websites, DMS, and SharePoint.</p> <p>Company Z: intranet websites, programmes, reporting channels, hotlines, and cloud-based tools.</p>	<p>Examples of IT systems used:</p> <p>Company X: NAPA system, Bick view, FMS systems, and innovation programmes.</p> <p>Company B: PMS and EPS systems, Microsoft Word, Excel, and SharePoint.</p> <p>Company Z: ChemSoft, System 800XA Health, TIA and SOFI, and Decathlon.</p>	<p>Examples of IT systems used:</p> <p>Company X: not large impact.</p> <p>Company B: not large impact.</p> <p>Company Z: applications like LoTSP, EnergySave, Drivetune, Drivebase, Voice operated systems, and Ellipse Select.</p>

**Table 5. 1 Roles of levers of control and IT in managing CSR strategy at companies X, B, and Z**

## **5.2. Belief control systems**

### *5.2.1. Reinforcing and stabilizing the key message of CSR strategy*

The results demonstrate that belief control systems are used to reinforce and stabilize the key messages of a CSR strategy for both short- and long-term purposes. To achieve this goal, it is important to ensure that beliefs systems communicate with as many employees as possible in the companies. Communicating CSR objectives and engaging with various people in the organization raises awareness about the CSR impact on the company's business activities (Arjaliès & Mundy 2013; Simons 1995). For this reason, CSR managers at companies X, B, and Z have engaged employees in CSR strategy objectives and activities through several control mechanisms such as launching workshops, education programmes, regulatory games, internal newspapers, and intranet. Through these mechanisms, they communicate CSR values and inspire employees to explore new opportunities and innovations relate to CSR. However, the study findings suggest that in order to accomplish this purpose, factors such as the company's organizational structure and operations play a crucial role.

The present study raises issues that are related to the organizational structure (see e.g. Gond et al. 2012; Arnold et al. 2011) and type of operations as the factors that influence the approach or method companies adopt to communicate their CSR strategy objectives and activities. As described in Chapter 4, these factors render the communication of CSR either simpler or more complex. The results of this thesis show that the communication of CSR strategy becomes more difficult for decentralized organizations with different types of operations (like Company X).

Gond et al. (2012) highlight that organizational structure affect the use of MCSs and integration of sustainability into CSR strategy. These authors call for a qualitative empirical study, which can evaluate these issues when organizational structures modify from one configuration to another. Comparing the study of Gond et al. (2012) with the study of Arjaliès & Mundy (2013), the latter does not reveal the consequences resulting from organizational structure and their impact on MCS and integration of CSR strategy. Thus, the present study, by raising organizational structure as an issue related to the management of CSR strategy, suggests that the reason for this may be referred to in the results, which could be reached by conducting a case study instead of a survey/questionnaire study. Arjaliès & Mundy (2013) performed a survey/questionnaire study, which may be restricted in a way to achieving such consequences related to organizational structure and their effects on MCS for managing CSR strategy.

In addition, this study show that the company's type of operations can create disadvantages for reinforcing and stabilizing the key messages of CSR strategy. The findings with regard to Company X indicate difficulties in engaging employees in the key messages of CSR strategy objectives and activities. Employees execute during various working time slots because of the type of operations. These issues make it difficult for CSR managers to informate and communicate CSR values with their employees.

Comparing the results of companies B and Z with company X does not seem that these companies experience the same issues because of more centralized organizations and unified type of operations. However, the findings of this thesis are limited in terms of generalizing or drawing a final statement in this regard. Therefore, these issues require further specified investigations that focus particularly on CSR and factors like the company's organizational structure and/or the company's type of operation.

#### *5.2.2. The roles of IT in supporting belief control systems*

The findings suggest that IT applications support belief control systems to informate<sup>10</sup> and automate<sup>11</sup> the process of implementing CSR objectives and activities in companies X, B, and Z. In the context of IT supports belief control systems, the results show that to a certain extent IT applications are used to provide online education and training programmes to train and informate employees about CSR strategy objectives and activities. Videos, films, websites, graphs, and online programmes are used as channels that are create an easier way for communicating and visualizing the key messages of CSR strategy objectives and activities. Moreover, IT applications informate and automate the works and create the potential for distributed groups to perform the tasks effectively through communication and visualization channels such as e-mail, intranet, video teleconferencing, and virtual private networks (Pearlson & Saunders 2010).

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<sup>10</sup> Informate: This term is adopted from Pearlson & Saunders (2010, p.379) and Pearlson (2001) and means 'to imply adding information to a job or task' as well as 'to bring out the information aspects of the job to assist assessment, monitoring, and decision making'. The present thesis adds to the above definition and defines 'informate' as the way CSR managers use it to make stakeholders (internal, external) inform about CSR strategy objectives and activities.

<sup>11</sup> Automate: This term is adopted from Pearlson & Saunders (2010, p.379) and Pearlson (2001) and means 'where the tasks done are simply put on a computer to increase speed and accuracy and to cut costs.' The present thesis adds to the above definition and defines 'automate' as a way users collect data, get access to relevant information, create reports, and analyse and measure processes automatically in order to increase speed and accuracy in CSR activities operations.

The study findings reveal that despite the efforts managers make for using IT as an additional support for reinforcing and stabilizing the major purposes of CSR strategy, the type of IT platforms/systems (integrated and disintegrated) companies use plays a crucial role.

As mentioned earlier, Companies X, B, and Z receive a distinct level of IT support to informate and/or automate CSR strategy objectives and activities. This is because IT systems are restricted in supporting CSR activities.

Visualization allows using the human visual system to draw information from data and to provide an overview of the sophisticated data to identify the structure, patterns, trends, and the relationships between data and information (Tegarden 1999). Therefore, visualization would help CSR managers to reinforce and stabilize the key messages of CSR strategy objectives if they are equipped with integrated IT systems.

In addition to an integrated IT system, the company's organizational structure (centralized and decentralized) influences the way to informate and automate CSR data and information throughout the organization. For example, as a decentralized organization, Company X with a disintegrated IT system experiences difficulty in collecting CSR data and information and distributing it properly to employees.

### ***5.3. Boundary control systems***

#### *5.3.1. Identifying and managing threats*

In terms of boundary control systems, the study results show that the companies' external relationships have an impact on how companies define and consider their boundary control systems associated with the management of CSR strategy.

Companies X, B, and Z use boundary control systems in the form of code of conduct and some additional internal programmes such as boundaries around suppliers and purchasing departments, integrity programmes, and internal auditing. These companies keep inform their stakeholders (internal and external) about these systems through an intranet, and education programmes and training to identify opportunities (what is acceptable) and avoid potential risks (what is unacceptable) around their CSR and stakeholder relationships.

Obviously, the use of any control system including boundary control systems is unique in each company. For example, Company X encounters and experiences different types of risks and opportunities related to its external stakeholder relationships because of its operations (as it is shipping company). A company's operations determine and affects its stakeholder

relationships; thus, this creates a multi-dimensional role for the company's suppliers, customers, and competitors. As a result, the company designs a cautious and attentive policy for its external stakeholder relationships (O'Riordan & Fairbrass 2008).

In contrast to Company X, it is seen that Company B and Company Z have enforced stringent boundaries around their supply chain and supplier relationships. These companies have applied additional boundary control systems around their purchasing programme and supplier relationships including the adoption of integrity programmes to provide extra controls across products and services.

They are sensitive to purchased products and control them by reviewing the material selection guidelines, health and safety standards, and environmental checklists to ensure that the CSR strategy objectives are implemented both internally and externally. They carefully screen their suppliers' code of conduct and review their standards to prevent potential risks and non-compliant behaviours that may arise from suppliers and/or other external stakeholders.

In addition, all the three studied companies attempt to create a secure and safe workplace environment by defining employees' right to eliminate potential risks and to ensure fewer negative effects from their business trades to society and the environment.

### *5.3.2. The roles of IT in supporting boundary control systems*

In terms of IT support for boundary control systems of CSR strategy at companies X, B, and Z, the results indicate that IT systems automate and informate boundaries around CSR strategy objectives and activities. This is executed by enabling easy access to CSR data and information for collecting, analysing, and reporting relevant data and informate them to both internal and external stakeholders. However, the results reveal that the existing IT systems such as SharePoint, data management system (DSM), and the websites of Companies X and B do not have a significant impact on the boundary control systems of CSR strategy; these systems are not sufficiently integrated to manage various types of data and information about CSR boundaries, both internally and externally.

These issues can be referred to the company's type of IT system. Integrated IT systems such as unified communication, virtual private networks, and intranet have the capability to

automate and transformate<sup>12</sup> the way companies communicate and manage various data and information processes (Pearlson & Saunders 2010; Pearlson 2001).

Pearlson & Saunders (2010; 2004) note that IT applications facilitate processes that are linked across companies by creating an integrated supply chain management system that enables workflow coordination, which means integration and automation of critical business processes that are not internal to a company. Therefore, in the context of a company's boundary controls for CSR strategy, it is important to have a dynamic interaction with both internal and external stakeholders, but the present study is restricted in discussing how IT systems support boundary control systems to manage CSR strategy, particularly boundaries associated with external stakeholder relationships.

In contrast to companies with less integrated IT systems, companies that implemented more integrated IT systems – as in the case Company Z – are able to provide better access, automate, informate, and integrate their CSR boundaries with their internal and external stakeholders. Company Z supports its boundaries for CSR through a range of IT applications such as hotlines, cloud-based tools, and online programmes, which give both internal and external stakeholders easy access, and automates facilities for managing CSR data and information (see Chapter 4, Table 4.13).

#### **5.4. Diagnostic control systems**

##### *5.4.1. Managing performance of CSR critical activities*

To manage the performance of CSR activities, a range of diagnostic control mechanisms are used in order to allocate resources and prioritize specific activities, and to analyse and follow up on the process and progress of CSR activities. By using diagnostic control systems such as

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<sup>12</sup> The term 'transformate' is inspired and is a combination of the definitions by Pearlson & Saunders (2010) and Arjaliès & Mundy (2013, p.297).

According to Pearlson & Saunders (2010, p.12) transformate is 'transforming raw material into value creating products'. Also, transformate means 'collecting data from organizational units and transforming the data into information for the strategic decision makers (2010, p.86)'.

Arjaliès & Mundy (2013, p.297) mention about 'transformation of business practices', which, for the present thesis, mean activities and processes related to CSR that assist the transformation of business practices toward CSR strategy objectives.

Therefore, the present study interprets the term 'transformate' as transforming data and information of CSR activities (raw material), which after a series of analysis and measurement processes transform into results/output (value creating) that are determined for the CSR strategy plan and CSR objectives that need to be improved or prioritized. In this way, IT systems support these processes from collecting data from different units and transforming them into results/output, which will be used for strategic decisions making.

budgeting and performance measurement, the performance of CSR strategy activities are planned, monitored, and evaluated (see Chapter 4 and Table 5.1).

At Companies X, B, and Z, diagnostic control systems are used in different forms for budget planning, meetings, projects, reporting, and consultations. Data and information related to CSR activities are collected from different operational units of the organization and, thereafter, these data and information are analysed and measure the process and progress of CSR activities to evaluate their performance.

When it comes to budget planning, Companies B and Z allocate a separate budget for their CSR activities. For instance, hazardous and emergency situations are accorded higher priority in B, while Z distinguishes budget for local and global CSR activities, and X does not allocate a separate budget for operational-level CSR activities (at least at the time the data were collected). Therefore, non-allocation of budget for CSR activities is marked by CSR managers in company X as a disadvantage for operating CSR activities. Company X notes that decentralized organizations would benefit if a separate budget is allocated for CSR along with a CSR group that works predominantly on these issues. Arjaliès & Mundy (2013) state that ‘the relatively low proportion of companies that have implemented operational-level budgets for CSR and have incorporated CSR measures into their compensation programmes suggest that diagnostic processes for CSR strategy do not have equal priority to those for mainstream business strategy’ (pp. 297–298).

#### *5.4.2. The roles of IT in supporting diagnostic control systems*

Different IT systems at Companies X, B, and Z are used to support diagnostic control systems of CSR; the IT systems transformate data and information through a series of analysis and measurement processes to create an easier and improved understanding of the outcome of CSR activities. In addition, IT systems at Companies X, B and Z support diagnostic control systems to informate and automate these processes; however, each company receives distinct support from different types of IT systems to transformate, informate, and automate diagnostic processes of CSR activities. These issues are explained as follows.

Company X uses different types of IT systems such as NAPA to transformate data and information regarding operational processes of CSR activities. The achieved results are used and considered for the operational level of CSR such as budget plans and resource priorities. In addition, Company X uses a fuel management system (FMS) to automate and accelerate the operational processes of CSR activities. A FMS supports the diagnostic processes of CSR

activities and creates quicker analysis of CSR data and information, which will later be used in the diagnostic control processes of CSR strategy, such as reports, analysis, and meetings. Company X also uses another IT system called Bick View to informate diagnostic data and information through visualization of statistical data and information related to CSR activities (e.g. recycling, see Chapter 4).

As mentioned frequently in this chapter, the type of IT systems (integrated, disintegrated) are influential in terms of quantity and quality of support. For example, IT systems that support diagnostic processes of CSR activities at Company B are disintegrated. Therefore, B has difficulty in managing distributed diagnostic data and information related to CSR activities. However, process management systems (PMS) and environmental performance systems (EPS) are two IT systems that support them to transformate and automate the diagnostic processes of CSR activities.

Similar to Companies X and B, Company Z also benefits from various IT systems or applications such as 'Chem Soft', 'Teknikföretagens Informationssystem om Arbetsmiljö (TIA)', and corporate sustainability software package (SOFI) to transformate, informate, and automate the diagnostic processes of CSR strategy activities. In addition, IT applications have the potential to support and monitor strategy activities through storing, manipulating, and analysing relevant data and information (Pearlson 2001).

Chem Soft, TIA, and SOFI transformate the operational processes of CSR. These systems transformate data and informate CSR activities for diagnostic purposes such as budget plans by facilitating analysis and reporting of environmental data and information and measuring the safety processes data and environmental parameters like chemical subjects, energy, and water consumption. Also, IT systems or applications have the capacity to transform management and communication of data and information processes from various types of activities (Pearlson 2001).

Chem Soft, TIA, and SOFI are used to automate diagnostic processes of CSR activities through collecting and creating ease of use and provide quicker access to relevant data and information. Company Z notes that without support from these systems, analysis and measurement processes of environmental parameters would be quite complicated and inaccurate. Hence, inaccurate and complicated results can influence the decision-making process of CSR strategy activities.



The above-mentioned IT systems at Company Z inform data and information related to CSR activities for diagnostic purposes by enabling and providing users access to CSR data and information.

## **5.5. Interactive control systems**

### *5.5.1. Managing strategic uncertainties and opportunities*

Broadly, interactive control systems manage risks and strategic uncertainties and identify opportunities that arise from internal and external stakeholders' relationships (Heinicke et al. 2016; Kruis et al. 2016; Widener 2007; Simons 1995, 1999). To manage these issues at Companies X, B and Z, interactive control systems are employed through several mechanisms such as formal and regular meetings, debates and consultations, and signing of different agreements and projects. However, each company employs its own technique of using the interactive mechanisms; for example, some use agreements like ISO contracts while some are signing different projects around their CSR strategy.

At Company X, CSR managers deal with the strategic uncertainties and identify opportunities around their CSR strategy through regular dialogue and consultation with their internal and external stakeholders. They dynamically exchange information with their stakeholders about CSR regulations for local and foreign governments and continually discuss the European and Baltic laws concerning CSR. They attempt to update their internal stakeholders on these issues (CSR at shipping industries' regulations and restrictions) in order to avoid needless risks such as violation of terms or rules and to identify opportunities for innovation related to CSR.

The study findings show that Company X adopts cautious policies with its external stakeholders. This is because the company's type of operations compel managers to compromise with their suppliers and customers, who are also the company's competitors. These issues are regularly discussed with employees across the company to provide them opportunities for identifying innovations and avoiding risks that may emerge from external stakeholders' relationships and to increase the potential to gain competitive advantages for the company (GRI guidelines<sup>13</sup> 2014; Porter & Kramer 2006a, 2006b). This company has inscribed

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<sup>13</sup> Global Reporting Initiative (GRI), sustainability reporting guidelines on economic, environmental, and social performance.

different ISO agreements such as ISO 50001 to strengthen its opportunities for competitive advantages and avoid risks related to CSR and external stakeholders' relationships.

Company B also manages these issues related to CSR and stakeholders' relationships through various interactive mechanisms, such as considering the standards around CSR, signing contracts and projects, and launching education programmes, and having regular dialogues and meetings with both internal and external stakeholders. Through signing different projects and running various education programmes, this company prevents unnecessary risks such as economic loss that arises from unskilled and uneducated labour and seeks innovations by increasing competitive advantage such as brand value and reputation. This company has also inscribed several ISO agreements such as ISO 9001, 50001, and 14001 to avoid the risks related to CSR and relationships with external stakeholders, such as suppliers, to control their CSR standards and requirements.

Similarly, Company Z employs interactive control mechanisms such as meetings and dialogues, different programmes such as environmental product declaration (EPD) and supplier sustainability development (SSD) to manage risks and identify opportunities related to CSR and stakeholders' relationships. They standardise CSR activity processes through EPD and SSD programmes (see Chapter 4, p. 65) and sensitively control material sources, components, and services to avoid any unnecessary risks that may emerge from suppliers' relationships. By so doing, they encourage the operational department, employees, and subordinates to discourse with expertise, customers, and authorities and to anticipate the potential risks and opportunities that may arise from different parts or relationships in the organization.

#### *5.5.2. The roles of IT in supporting interactive control systems*

As mentioned earlier, the role of interactive control systems is to manage risks and strategic uncertainties and identify opportunities (Simons 1995, 1999). However, how IT systems support control mechanisms related to CSR strategy objectives and activities at Companies X, B, and Z are not completely clear in this study. In this regard, the reason underlying these issues could relate to the limitation of this study.

At Company Z, IT applications support interactive control mechanisms to manage risks and identify opportunities related to CSR and stakeholders' relationships through automating and informing these processes. Several IT systems and mobile applications such as LoTSP and EnergySave, and Drivetune are used to support these processes at Company Z. These applications automate and informate interactive control mechanisms of CSR activities by

providing a dynamic connection between managers, subordinates, and external stakeholders, such as customers and suppliers.

These applications support customers and suppliers to receive new services about the company's CSR objectives and activities. For instance, they enable users (e.g. customers and/or suppliers) to analyse more intelligently the different data regarding CSR and optimize their safety and environmental operations. Likewise, they support users to access and collect relevant CSR data and automate the required services.

IT applications do not seem to have a major impact on the interactive control mechanisms of CSR at Companies X and B. Indeed, the thesis results are restricted in this regard and, therefore, cannot be applied to argue and/or to respond to how IT applications support or have an impact on the interactive control mechanisms of CSR. Related to this issue, Company X has pointed to the lack of an integrated IT system that can manage distributed data and information at their decentralized organization.

Company B has also pointed to the same issue and the lack of having access to an integrated IT system. The company postponed the question for 'later' when asked if they would implement a new IT system (the company plans to implement a new IT system).

In addition to the arguments that are put forward by Companies X and B regarding these issues, the present study argues and relates these issues to two reasons for understanding why the studied companies did not elaborate on the question regarding CSR and interactive control mechanisms for managing strategic uncertainties: first, the reason could be related to the cautious policies adopted by companies. Generally, companies are cautious about disclosing external stakeholder relationships associated to CSR. (Gray 2010; Miles et al. 2006; Rangan et al. 2012). The second reason could be attributed to corporate legitimacy, reputation, and competitive advantages (Porter & Kramer 2006a; 2006b).

## **6. CONCLUDING DISCUSSION**

The present study addresses the following research question: *What are the roles of information technology (IT) in supporting management control systems for implementing CSR strategy.* This research question is replied in two parts: the first part is linked to the role of MCS (the levers of control framework), and provides a detailed account on how firms use MCS to manage their CSR strategy implementation activities. The second part focuses on the role of IT in supporting MCS for CSR strategy implementation. The roles of IT are examined because earlier research suggests that a better understanding of the relationships between sustainability control systems (SCS) and MCS is enabled through a ‘socio-technical’ process, that is, IT infrastructure that makes organizations move from regular management control systems to more integrated and dynamic control systems, which in turn support the improvement in new business opportunities (Gond et al. 2012, p.209–210). Therefore, IT infrastructure is needed to involve the methods that create a link between SCS and MCS. In addition, the potential ability of IT in supporting MCS for business processes (see Liew 2014; Pearlson 2001; Pearlson & Saunders 2010, 2004; Quattrone 2016), the lack of research in this area, and the call for further investigations to understand the linkages between MCS, CSR, and IT were other reasons for studying the role of IT in this regard (see Thambusamy & Salam 2010; Andersen et al. 2011).

### **6.1. Contributions of the study**

This study makes two contributions to the present understanding on this subject.

First, this study provides a more detailed account than previous research on how firms use MCS (the levers of control framework) to manage CSR strategy (Arjaliès & Mundy, 2013). The findings suggest that there are several ways of using MCS for managing CSR objectives and activities. More specifically, these diversities are perceptible when it comes to the use of the four levers of controls.

Second, this is the first study that examines the role of IT in supporting MCS for managing CSR strategy. The findings suggest that MCS is largely dependent on IT systems for managing CSR strategy objectives and activities. These issues are manifested in a decentralized organization. Gond et al. (2012) state that organizational structure and capacities affect the use of MCSs and integration of sustainability. Therefore, IT systems are potentially a solution for these issues; MCS is enabled through a ‘socio-technical’ process (IT systems) that makes organizations move from a regular management control system to a more integrated and dynamic control system (Gond et al. 2012, p.209–210).

The results of this thesis reveal that IT systems support MCS to better inform and communicate (informate) the key messages of CSR strategy objectives and activities both internally and externally. It is clear that IT systems support MCS to collect and access the relevant data and information regarding CSR strategy activities and, thereafter, analyse and evaluate them automatically (automate). In addition, IT systems support MCS processes for CSR strategy activities from data collection and information to achieving the results (transformate) (see Pearlson 2001; Pearlson & Saunders 2010; 2004; O'Donnell & David 2000).

In addition, the findings suggest that IT systems support MCS by visualizing data and information related to CSR strategy activities (see Quattrone 2016; Brignall & Ballantine 2004; Jourdan et al. 2008). More specifically, through visualization, IT systems create easier communication of CSR related activities and support belief and boundary control systems (top-down management control) to reinforce CSR strategy objectives through various channels such as films, online trainee programmes, and an intranet platform. Similarly, through visualization, IT systems support diagnostic and interactive control systems (bottom-up management control) for CSR activities by creating various dashboards with several information, thereby contributing and improving monitoring and organizing of CSR activities such as reducing plastic materials and recycling.

Research states that MCS are able to transform business practices (Arjaliès & Mundy, 2013; Henri & Journeault (2010); however, companies have often weak and disconnected MCS approaches to manage their CSR practices (Porter & Kramer 2006b). The potential ability of IT systems to improve the effectiveness and efficiency of MCS processes seems to provide a solution and support for these issues. The results of this study suggest that IT systems support MCS by informing relevant and accurate data and information, as well as automating, monitoring, and transforming these processes to handle the challenges related to CSR strategy activities that are difficult to solve using these traditional MCS processes (Gond et al. 2012; Andersen et al. 2011; Thambusamy & Salam 2010).

Traditional MCS involves single practices such as budgeting and risk management. (Arjaliès & Mundy (2013; Henri & Journeault (2010). Such single MCS mechanisms seem to be incomplete and, therefore, there is a need to include processes from strategic formulation to decision making and evaluation for managing strategies as CSR strategy (Ferreira & Otlely 2009). The findings of this thesis suggest that IT systems work as a handle for MCS

(Thambusamy & Salam 2010; Gray 1992) and enable them to support the management of CSR strategy activities through the complete processes.

More specifically, in the context of MCS – belief control systems – the present findings suggest that managing, reinforcing, and stabilizing, which are the key messages of CSR strategy objectives and activities, would be difficult without support from IT systems, especially in large companies and decentralized organizations. Information technology systems enable/support MCS, belief control systems, which aim to informate and automate data and information related to CSR strategy activities and create an easier and quicker way for communicating and accessing CSR related activities. Except this, the results reveal that IT systems contribute to innovation and development of CSR activities by creating easier access to detailed information and enabling the analysis of complex data and information. Furthermore, IT systems support MCS – belief control systems – to create a better network and opportunities for companies (examined in this study) and connect them to global information related to CSR strategy in order to stay update and exchange relevant knowledge. In fact, IT systems enable easy access to information including social and environmental data and change the way of communicating this information (Thambusamy & Salam 2010).

Likewise, MCS – diagnostic control systems – and IT systems support these control mechanisms to transformate data and information associated with CSR activities through a series of analysis and measurement processes to provide easy and improved understanding of the outcome of CSR activities. In this context, the findings indicate that the diagnostic control processes of CSR strategy activities would be impossible without support from different IT systems. The findings show that IT systems support CSR strategy activities in large organizations such as Companies Z and X (examined in this study) by following up and automating the operational processes, and by monitoring and analysing vast amount of data and information about CSR strategy activities such as measuring energy and water consumption, recognizing chemical subjects, as well as analysing and reporting the related information in this context. The process and progress of any strategy including CSR needs to be monitored through MCS, and IT systems have the potential to monitor these processes through storing, manipulating, and analysing (Pearlson 2001).

In terms of MCS – boundary and interactive control systems – the findings indicate that IT systems support these control mechanisms to informate and automate data and processes related to CSR activities by improving collection, access, and distribution of CSR data and information.

However, the results also indicate that IT systems at Companies X and B do not have a large impact on boundary and interactive control systems for managing CSR strategy activities.

However, it is appropriate to mention that even though IT systems have positive effects on the MCS of an organization, they can have an undesirable impact and seem challenging for companies (Larsson et al. 2001). It should not be overlooked that IT systems have an add-on-role for supporting MCS (Granlund 2007; Granlund & Mouritsen 2003). Therefore, the following discussion describes the challenges related to the use of IT systems, as evidenced by the empirical findings of this study.

## ***6.2. Challenges related to use of IT systems***

In this section, an attempt has been made to reflect some of the challenges associated with the use of IT systems, as observed in the empirical findings of this study.

The first challenge is the potential of IT systems in an integrated and/or disintegrated system ( Baumann-Pauly et al. 2013; Maon et al. 2009).

A disintegrated IT system creates difficulties to informate, automate, and transformate the operational processes of CSR activities. A disintegrated IT system is not entirely compatible in terms of supporting, for example, diagnostic control processes of CSR. The findings of this study indicate that to some extent IT systems at Company X have difficulty to support diagnostic control processes such as collection and analysis of data and information for CSR strategy activities such as garbage disposal and electricity handling at terminals. The lack of an integrated enterprise infrastructure software may create difficulties for companies to communicate their key strategic messages (Hanseth & Lyytinen 2010).

An integrated IT system has the potential to access and collect data from various databases and support processes that are required to obtain detailed and relevant information that will be used for different managerial decisions (O'Donnell & David 2000). Furthermore, an integrated IT system has the potential to provide business EPD and SSD with quick, accurate, and rigorous information that support the operation, management, and decision-making processes of the business strategies (e.g. Liew 2014; Pearlson 2001; Pearlson & Sounders 2010; 2004; Quattrone 2016).

Related to issues that are mentioned above, investing in integrated IT systems may be the solution to support and improve the MCS processes of CSR such as collecting, analysing, and accessing data and information. Research shows that there is a positive and strong relationship

between IT investment and the development of business processes, practices, and structures (Larsson et al. 2001; Zammuto et al. 2007). However, the empirical data of this study are restricted to manoeuvring these issues and the investment made by companies in IT systems in how it impacts the MCS of CSR.

The second challenge is related to the lack of knowledge on how IT drives MCS logic and how MCS problems derive IT solutions (Granlund and Mouritsen, 2003; Granlund, 2007; Granlund, Mouritsen and Vaassen, 2013). The rapid development in IT applications contrasted with overtaking users' knowledge in using these applications creates complexities in performing tasks effectively (e.g. Ensmenger 2012; Granlund 2007; Heyck 2008; Turkle 2004). Therefore, based on these details, the present study suggests that the type of IT system (integrated/disintegrated) is not relevant in the context of supporting MCS for CSR strategy activities; rather, the lack of knowledge in using these IT systems can create complexities. Research indicates that it is challenging to capture how an IT system is adopted and incorporated into an organisation (e.g. Ensmenger 2012; Granlund 2007; Heyck 2008; Larsson et al. 2001; Turkle 2004). However, the findings in this regard are restricted to realize exactly how companies examined in this study experience and handle such issues.

### ***6.3. Suggestions for future research***

Future research is recommended to address the following issues related to this study.

To investigate the role of IT in supporting MCS in CSR strategy activities, the present study focuses on three large companies; therefore, future research could focus on one case company and investigate these issues from a closer perspective. In addition, this study excludes data from IT departments in how IT managers/designers have an impact on implementing CSR strategy activities. In future studies, it may be relevant to investigate how IT managers/designers improve and develop IT systems to support MCS for implementing and integrating CSR activities (interaction between MCS and IT systems). Larsson et al. (2001) argue that the communication gap and interaction between business executives and IT departments (designers) can create misalignment between the business requirements and what IT applications support.

The results of this study suggest that the diagnostic control processes of CSR, which refers to allocation of budget, that is, a separate and structured budget for CSR strategy activities, may be crucial for operating these activities in an efficient way. The study findings reveal that companies which implemented a structured budget around their CSR activities performed or



operated their CSR activities effectively. Budgeting is the most general diagnostic form of MCS for organizing and conveying strategic priorities (Abernethy & Brownell 1999; Simons 1999, 1995). Previous research highlights that a consistent and operative budget plan with resource potential could handle more effectively the costs and benefits of a strategy. Setting specific targets in a certain budget for environmental issues may lead to better integration of the strategy into the control systems. (see e.g. Henri & Journeault 2010; Maas & Reniers 2014). Arjaliès & Mundy state ‘the established difficulties in measuring return on CSR investments may be one reason for the absence of dedicated CSR budgets in some companies [...]’ (2013, pp.284–300). Therefore, it is recommended that future studies focus on diagnostic control processes of CSR, particularly the form of budget for CSR practices in different cases and investigate these issues through a wider lens. Scholars state that most the companies do not allocate a budget for CSR activities; or, if they do, it is a budget in the form of different resources that can lead to a misalignment and/or weak management of CSR strategy within the organizations (e.g. Arjaliès & Mundy 2013; Archel et. al 2011; Henri & Journeault 2010; Widener 2007). Furthermore, future research can include the role of IT and investigate if IT systems have any effect in supporting the diagnostic processes of a budget plan for executing CSR practices.

A fruitful avenue for future studies would be to conduct a study focusing merely on the role of IT in supporting MCS, particularly interactive control systems of CSR strategy activities. In doing so, the studies will investigate the role of IT in supporting management control processes that are not only internal for CSR strategy activities but are linked across companies. This will potentially help research to understand the role of IT in supporting interactive control systems for CSR strategy activities and its impact on an integrated supply chain management around CSR strategy.

In addition to the suggestions mentioned above, this study observed that in some of the companies, MCS experienced difficulty in managing CSR strategy activities without support from the IT systems. Informing and communication the key messages of CSR strategy objectives and activities and analysing and evaluating the performance of these activities are important for integration of CSR in the organization. However, in a decentralized organization with distributed data and information, managing these issues would be impossible without IT support. Hence, future studies are recommended to focus on the role of IT in supporting MCS in two different companies, one with a decentralized and the other with a centralized structure to investigate how IT matters and supports MCS for CSR.

## 7. LIST OF REFERENCES

- Abernethy, M. A. & Brownell, P., 1999. The role of budgets in organizations facing strategic change: an exploratory study. *Accounting, Organizations and Society*, 24(3), pp.189–204.
- Adams, C. A. & Carlos, L.G., 2007. Engaging with organisations in pursuit of improved sustainability accounting and performance. *Accounting, Auditing & Accountability Journal*, 20(3), pp.333–355.
- Adams, C.A. & McNicholas, P., 2006. Making a difference: Sustainability reporting, accountability and organisational change. *Accounting, Auditing & Accountability Journal*, 20(3), pp.382–402.
- Andersen, M.L. & Hong, Y. (David & Zhang, L., 2011. IT, CSR And Industry Relationships: A Descriptive Study. *International Journal of Management and Information Systems*, 15(3), pp.107–117.
- Arjaliès, D.L. & Mundy, J., 2013. The use of management control systems to manage CSR strategy: A levers of control perspective. *Management Accounting Research*, 24(4), pp.284–300.
- Archel, P., Husillos, J. & Spence, C., 2011. The institutionalisation of unaccountability: Loading the dice of Corporate Social Responsibility discourse. *Accounting, Organization and Society*. 36, pp. 327-343.
- Arnold, V., Benford, T., Canada, J. & Sutton, S. G., 2011. The role of strategic enterprise risk management and organizational flexibility in easing new regulatory compliance. *International Journal of Accounting Information Systems*, 12(3), pp.171–188.
- Asif, M., Searcy, C., Zutshi, A. & Fisscher, O. A.M., 2013. An integrated management systems approach to corporate social responsibility. *Journal of Cleaner Production*, 56, pp.7–17.
- Baumann-Pauly, D., Wickert, C., Spence, L. J. & Scherer, A. G., 2013. Organizing Corporate Social Responsibility in Small and Large Firms: Size Matters. *Journal of Business Ethics*, pp.693–705.
- Baxter, P. & Jack, S., 2008. The qualitative report qualitative case study methodology: Study design and implementation for novice researchers. *The Qualitative Report*, 13(4), pp.544–599.
- Bhatt, G.D. & Grover, V., 2005. Types of Information Technology Capabilities and Their Role in Competitive Advantage: An Empirical Study. *Journal of management information systems*, 22(2), pp.253–277.
- Bisbe, J. & Otley, D., 2004. The effects of the interactive use of management control systems on product innovation. *Accounting, Organizations and Society*, 29(8), pp.709–737.
- Bowen, H. R., 2013. *Social Responsibilities of the Businessman*. United States of America: The University of Iowa Press.
- Brignall, S. & Ballantine, J., 2004. Strategic Enterprise Management Systems: new directions for research. *Management Accounting Research*, 15(2), pp.225–240.
- Bryman & Bell, 2015. *Business Research Methods* - Alan Bryman, Emma Bell - Google Books. In *Business Research Method*. p. 777.
- Burnett, R.D. & Hansen, D.R., 2008. Ecoefficiency: defining a role for environmental cost management. *Accounting Organization and Society*, 15, pp. 551-581.

- Carroll, A. B., 1999. Corporate Social Responsibility: Evolution of a Definitional Construct. *Business & Society*, 38(3), pp.268–295.
- Clarkson, M.E., 1995. A Stakeholder Framework for Analysing and Evaluating Corporate Social Performance. *Academy of Management Review*, 20(1), pp.92–117.
- Curtis, E., Lillis, A. & Sweeney, B., 2015. Simons Says: Distinguishing theory and practice in the levers of control framework. *Paper presented at the 10th ENROAC conference, Galway, Ireland*, pp.1–26.
- David, J.S., Dunn, C.L., McCarthy, W.E. & Poston, R.S., 1999. The Research Pyramid: A Framework for Accounting Information Systems Research. *Journal of Information Systems*, 13(1), pp.7–30.
- Ethics Practitioners' Association of Canada, 2015: An Implementation Guide for Canadian Business: Implement a CSR strategy.
- Ensmenger, N., 2012. The Digital Construction of Technology: Rethinking the History of Computers in Society. *Technology and Culture*, 53 (4), pp. 753-776
- European Commission, 2001. Promoting a European Framework for Corporate Social Responsibility- Green Paper. Office for Official Publications of the European Communities, Luxemboug.
- Ferreira, A. & Otley, D., 2009. The design and use of performance management systems: An extended framework for analysis. *Management Accounting Research*, 20(4), pp.263–282.
- Fortune, 2015. The Five Biggest Corruption Scandals of 2015. [online] Available at: <https://fortune.com/2015/12/27/biggest-corporate-scandals-2015>.
- Global Reporting Initiative, 2014. G4 Sustainability Reporting Guidelines. *Global Reporting Initiative*, pp.1–97.
- Gond, J.P., Grubnic, S., Herzig, C. & Moon. J., 2012. Configuring management control systems: Theorizing the integration of strategy and sustainability. *Management Accounting Research*, 23(3), pp.205–223.
- Granlund, M., 2007. On the Interface between Management Accounting and Modern Information Technology – A literature review and some empirical evidence. *Working Paper, SSRN, http://ssrn.com/abstract=985074.*, (April).
- Granlund, M. & Mouritsen, J., 2003. Introduction: problematizing the relationship between management control and information technology. *European Accounting Review*, 12, pp.77–83.
- Granlund, M., Mouritsen, J. & Vaassen, E., 2013. On the relations between modern information technology, decision making and management control. *International Journal of Accounting Information Systems*, 14(4), pp.275–277.
- Gray, R., 1992. Accounting and environmentalism: An exploration of the challenge of gently accounting for accountability, transparency and sustainability. *Accounting, Organizations and Society*, 17(5), pp.399–425.
- Gray, R., 2010. Is accounting for sustainability actually accounting for sustainability...and how would we know? An exploration of narratives of organisations and the planet. *Accounting, Organizations and Society*, 35(1), pp.47–62.

- Gray, R., 2002. The social accounting project and Accounting Organization and Society. Privileging engagement, imaginations, new accountings and pragmatism over critique? *Accounting, Organization and Society*, 27, pp. 678-708
- Hanseth, O. & Lyytinen, K., 2010. Design theory for dynamic complexity in information infrastructures: The case of building internet. *Journal of Information Technology*, 25(1), pp.1–19.
- Henri, J.F., 2006. Management control systems and strategy: A resource-based perspective. *Accounting, Organizations and Society*, 31(6), pp.529–558.
- Henri, J.F. & Journeault, M., 2010. Eco-control: The influence of management control systems on environmental and economic performance. *Accounting, Organizations and Society*, 35(1), pp.63–80.
- Henri, J., Journeault, M. & Ronge, Y. De., 2016. Levers of eco-control and competitive environmental strategy. *The British Accounting Review*, 48 (3), pp. 316–340.
- Heinicke, A., Guenther, T. W. & Widener, S. K., 2016. An examination of the relationship between the extent of a flexible culture and the levers of control system: The key role of beliefs control. *Management Accounting Research*, 33, pp. 25-41.
- Heyck, H., 2008. Defining the Compute: Herbert Simon and the Bureaucratic Mind- Part 2. *IEEE Annals of the History of Computing*, 30 (2), pp. 52-63.
- Hohnen, P., 2012. *Corporate Social Responsibility - An Implementation Guide For Business*, Available at: <http://econpapers.repec.org/RePEc:fej:articl:v:6b:y:2012:i:2:p:15-31>.
- Huffpost, 2016. U.S. Oil Industry Giant Paid Millions To A Company At The Center Of Huge Corruption Scandal. [online] Available at: [https://www.huffpost.com/entry/kbr-unaoil-corruption\\_n\\_56fafbf1e4b0a06d5803f5b8](https://www.huffpost.com/entry/kbr-unaoil-corruption_n_56fafbf1e4b0a06d5803f5b8).
- Johnston, P., Everard, M., Santillo, D. & Robèrt, K. H., 2007. Reclaiming the definition of sustainability. *Environmental Science and Pollution Research*, 14(1), pp.60–66.
- Jourdan, Z., Rainer, R.K. & Marshall, T.E., 2008. Business Intelligence: An Analysis of the Literature. *Information Systems Management*, 25(2), pp.121–131.
- Kruis, A.M., Spekl, R.F. & Widener, S.K., 2016. The Levers of Control Framework: An exploratory analysis of balance. *Management Accounting Research*, 32, pp.27–44. Available at: <http://dx.doi.org/10.1016/j.mar.2015.12.002>.
- Larsson, P., Löwstedt, J. & Shani, A.B. (Rami), 2001. IT and the learning organization: Exploring myths of change. *Organization Development Journal*, 19(1), pp.73–91.
- Liew, A., 2014. The use of technology-structured management controls: changes in senior management’s decision-making behaviours. *International Journal of Accounting Information Systems*, 17, pp.37–64.
- Maas, K., Schaltegger, S. & Crutzen, N., 2016. Integrating corporate sustainability assessment, management accounting, control, and reporting. *Journal of Cleaner Production*, 136, pp.237–248.
- Maas, S. & Reniers, G., 2014. Development of a CSR model for practice: Connecting five inherent areas of sustainable business. *Journal of Cleaner Production*, 64, pp.104–114.
- McWilliams, A., Siegel, D. S. & Wright, M. P., 2006. Guest Editors’ Introduction. Corporate Social Responsibility: Strategic Implications. *Journal of Management Studies*, 43, pp. 1-18

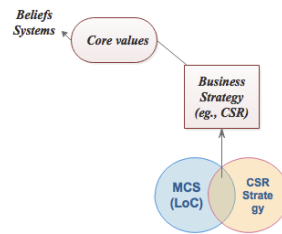
- Maon, F., Lindgreen, A. & Swaen, V., 2009. Designing and implementing corporate social responsibility: An integrative framework grounded in theory and practice. *Journal of Business Ethics*, pp. 71–89.
- Martyn, P., Sweeney, Breda & Curtis, E., 2016. *Strategy and control: 25 years of empirical use of Simons' Levers of Control framework*, *Journal of Accounting & Organizational Change*, Vol. 12 Issue: 3, pp.281-324.
- Melville, B.N. & Kraemer, K., 2004. Review: Information Technology and Organizational Performance: An Integrative Model of IT Business Value. *MIS Quarterly*, 28(2), pp.283–322.
- Miles, M.P., Munilla, L.S. & Darroch, J., 2006. The role of strategic conversations with stakeholders in the formation of corporate social responsibility strategy. *Journal of Business Ethics*, 69(2), pp.195–205.
- Moon, J., 2007. The contribution of corporate social responsibility to sustainable development. *Sustainable Development*, 15(5), 296-306.'
- Moorthy, M.K., Voon, O.O., Samsuri, C.A.S.B., Gopalan, M. & Tak Yew, K., 2012. Application of Information Technology in Management Accounting Decision Making. *International Journal of Academic Research in Business and Social Sciences*, 2(3), pp.1–16.
- Mundy, J., 2010. Creating dynamic tensions through a balanced use of management control systems. *Accounting, Organizations and Society*, 35(5), pp.499–523.
- NAPA, 2016. Software Solutions for Ship Design. [online] Available at: <https://www.napa.fi/software-and-services/ship-design/>.
- O'Donnell, E. & David, J.S., 2000. How information systems influence user decisions: A research framework and literature review. *International Journal of Accounting Information Systems*, 1(3), pp.178–203.
- O'Riordan, L. & Fairbrass, J., 2008. Corporate social responsibility (CSR): Models and theories in stakeholder dialogue. *Journal of Business Ethics*, 83(4), pp.745–758.
- Pearlson, Keri E and Saunders, C.S., 2010. *Managing and Using Information Systems, a strategic approach*, Fourth edition, John Wiley & Sons, INC.
- Pearlson, Keri E and Saunders, C.S., 2004. *Managing and Using Information Systems, a strategic approach*, 2nd edition, John Wiley & Sons, INC.
- Pearlson, K.E., 2001. *Managing and Using Information Systems: A strategic approach*. John Wiley & Sons, INC.
- Perego, P. & Hartmann, F., 2009. Aligning performance measurement systems with strategy: the case of environmental strategy. *Abacus* 45, pp. 397-428
- Porter, M.E. & Kramer, M.R., 2006a. Strategy & Society: The link between competitive advantage and corporate social responsibility. *Harvard Business Review*, 84(12), pp.78–92.
- Porter, M.E. & Kramer, M.R., 2006b. The Link Between Competitive Advantage and Corporate Social Responsibility. *Harvard Business Review*, 53(9), pp.78–92.
- Quattrone, P., 2016. Management accounting goes digital: Will the move make it wiser? *Management Accounting Research*, 31, pp. 118-122.

- Rangan, K., Chase, L.A. & Karim, S., 2012. Why Every Company Needs a CSR Strategy and How to Build It. *Harvard Business School, Working Paper No 12-088*, pp.1-31.
- Rodrigue, M., Maignan, M. & Boulianne, E., 2013. Stakeholders' influence on environmental strategy and performance indicators: A managerial perspective. *Management Accounting Research*, 24(4), pp.301-316.
- Schaltegger, S. & Burritt, R.L., 2010. Sustainability accounting for companies: Catchphrase or decision support for business leaders? *Journal of World Business*, 45(4), pp.375-384.
- Simons, R., 1995. Levers of Control: How Managers Use Innovative Control Systems to Drive Strategic Renewal. *Academy of Management Executive*, 9(2), p.xi, 215 p.
- Simons, R., 1999. *Performance Measurement & Control Systems for Implementing Strategy, 1st Edition*, Prentice Hall, New Jersey (USA), p.348.
- Soderstrom, K.M., Soderstrom, N.S. & Stewart, C.R., 2017. "Sustainability/CSR Research in Management Accounting: A Review of the Literature" In *Advances in Management Accounting*. Published online: 05 Jul 2017; 59-85.
- Taipaleenmäki, J. & Ikäheimo, S., 2013. On the convergence of management accounting and financial accounting - the role of information technology in accounting change. *International Journal of Accounting Information Systems*, 14(4), pp.321-348.
- Tegarden, D.P., 1999. Business information visualization. *Communications of the Association for Information Systems*, 1, paper 4, pp.1-38.
- Tessier, S., & Otley, D., 2012. A conceptual development of Simons' levers of control framework. *Management Accounting Research*, 23, pp. 171-185.
- Thambusamy, R. & Salam, A.F., 2010. Corporate Ecological Responsiveness, Environmental Ambidexterity and IT-Enabled Environmental Sustainability Strategy. *International Conference on Information Systems*, pp.1-11.
- Turkle, S., 2004. How Computers Change the Way We Think. *The Chronicle Review, Higher Education*, 50, pp. B26-B28
- United Nations World Commission on Environment and Development (WCED), 1987. Our Common Future: Report of the World Commission on Environment and Development. *United Nations Commission*, 4(1), p.300.
- Widener, S.K., 2007. An empirical analysis of the levers of control framework. *Accounting, Organizations and Society*, 32(7-8), pp.757-788.
- Yin, R.K., 2009. *Case Study Research: Design and Methods, 4<sup>th</sup> Edition*, Sage Publications, Thousand Oaks, CA.
- Zammuto, R.F., Griffith, T.L., Majchrzak, A., Dougherty, D.J. & Faraj, S., 2007. Information Technology and the Changing Fabric of Organization. *Organization Science*, 18(5), pp.749-762.

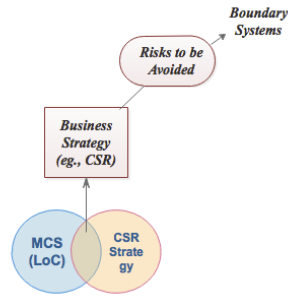
## 8. APPENDICES

### 8.1. Appendix. 1

This part includes information on the main areas that were covered in the interview with all the interviewees. The questions are structured based on Simons' LoC theoretical framework and Arjaliès & Mundy (2013). As mentioned in Chapter 3 (Method), the interviews were kept relatively open, and the questions were shared between the interviewees.

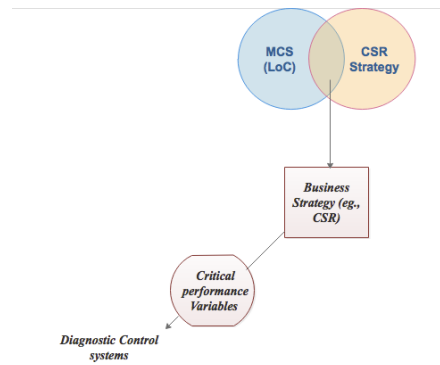


How Belief Systems Communicate Strategies (In This Case CSR) Within Organizations	
<b>What</b> (Key Constructions)	'Explicit set of belief that define basic values, purpose, and direction, including how value is created, level of desired performance, and human relationships'. (Simons, 1999, p.297)
<b>Why</b> Belief Systems Are Important	'To provide momentum and guidance to opportunity-seeking behaviours'. (Simons, 1999, p.297)
<b>How</b> to Measure or Use Belief Systems	'Mission statements, Vision statements, Credos, Statements of purpose'. (Simons, 1999, p.297)
<b>When</b> These Controls/Systems Should be Applied	'Opportunities expand dramatically, Top managers desire to change strategic direction, Top managers desire to energize workforce'. (Simons, 1999, p.297)
<b>Who</b> Are Engaged with These Types of Controls	Senior managers personally write substantive drafts Staff groups facilitate communication, feedback, and awareness surveys (Simons, 1999, p.297)
<b>Key Questions</b>	(In all the questions, CSR activities considered as to how the company defines them)
	Can CSR strategy/activities be defined as one of the core values of your business strategy? How do you define your short-term performance of CSR activities vs. your long-term responsibility? How do you ensure that every employee, every unit, and subunit consider the core values of CSR activities? How do you inspire employees to create shared belief and mission in CSR activities? Do you set any challenging goals concerning CSR activities? If yes, please elaborate how? Did you declare any off-limit actions regarding CSR activities? If yes, what are they, and please elaborate on them. What mechanisms would you apply for setting the core values of your business in CSR activities?

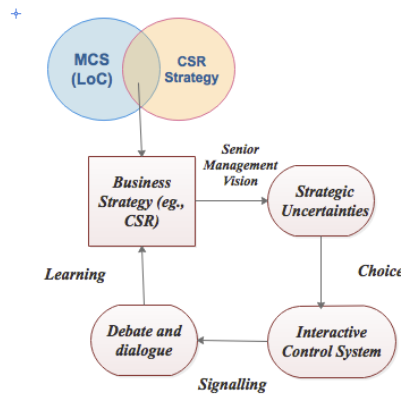


How Boundary Systems Communicate Strategies (In This Case CSR) Within Organizations	
<b>What</b> (Key Constructions)	‘Formally stated rules, limits, and proscriptions tied to defined sanctions and credible threat of punishment’. (Simons, 1999, p.297)
<b>Why</b> Boundary Systems Are Important	‘To allow individual creativity within defined limits of freedom. Rationalize actions Protect assets Remove unintended errors’. (Simons, 1999, p.297)
<b>How</b> to Measure or Use Boundary Systems	‘Code of business conduct Strategic planning systems Asset acquisition systems Operational guidelines’. (Simons, 1999, p.297)
<b>When</b> These Controls/systems Should be Applied	‘Business conduct Boundaries: when reputation costs are high Strategic Boundaries: when excessive search and experimentation risk dissipate the resources of the firm’. (Simons, 1999, p.297)
<b>Who</b> Are Engaged with These Types of Controls	Senior managers formulate with the technical assistance of staff experts (e.g. lawyers) and personally mete out punishment Staff groups monitor compliance. (Simons, 1999, p.297)
<b>Key Questions</b>	(In all the questions, CSR activities considered are based on how the company defines them)
	<p>What are your business conduct boundaries concerning CSR activities?</p> <p>In which unit of your business did you set the most boundaries concerning CSR activities? Why that specific unit?</p> <p>Do you have any conflict of interest in terms of CSR activities with your stakeholders, shareholders, government, and/or employees? If yes, please elaborate how do you manage those conflicts?</p> <p>Do you define any forbidden action concerning CSR activities?</p> <p>When do you define your boundaries regarding CSR strategy? (i.e. at what level of strategy implementation process do you define these boundaries regarding CSR activities )</p> <p>Do you differ between internal boundaries of CSR activities and external boundaries of CSR activities? If yes, why? Please elaborate more.</p> <p>Do you receive timely management reports of CSR activities?</p> <p>Did it ever happen that your business experienced some threats because of CSR activities or vice versa occur due to some opportunities of CSR activities? If yes, how, when, and where? Please elaborate your answer and explain how did you manage the situation.</p>





How Diagnostic Control Systems Communicate Strategies (In This Case CSR) Within Organizations	
<b>What</b> (Key Constructions)	‘Feedback systems that monitor organizational outcomes and correct deviations from pre-set standards of performance.’ Examples: ‘Annual profit plans and budgets, goals and objective systems, balanced scorecards, project monitoring systems, brand-revenue monitoring systems, strategic planning systems. (Simons, 1999, p.228)
<b>Why</b> Diagnostic Controls Are Important	‘To allow effective resource allocation, To define goals, To provide motivation, To establish guidelines for corrective action, To allow ex post evaluation, To free scarce management attention’. (Simons, 1999, p.228)
<b>How</b> to Measure or Use Diagnostic Controls	‘Set standards (e.g. setting and negotiating goals) Measure outputs (e.g. aligning performance measures by techniques like BSC) Link incentives to goal achievement (e.g. designing incentives, reviewing exception reports, following up critical exceptions)’ (Simons, 1999, p.228)
<b>When</b> These Controls Should be Applied	‘Performance standards can be pre-set, Output can be measured, Feedback information can be used to influence or correct deviations from standard, Process or output is a critical performance variable’. (Simons, 1999, p.228)
<b>Who</b> Are Engaged with These Types of Controls	Senior managers who set or negotiate goals, receive and review exception reports, follow up significant exceptions Staff groups who maintain systems, gather data and prepare exception reports (Simons, 1999, p.228)
<b>Key Questions</b>	<p>(In all the questions, CSR activities considered are based on how the company defines them)</p> <p>Do you allocate a separate budget for CSR activities or sustainability issues? If yes, please elaborate your answer (i.e. how is the allocation of this budget done). What are the resource allocation priorities regarding CSR activities? What is your company’s vision for CSR? Are CSR or sustainability issues defined as part of the company’s goal? If yes, please elaborate how you define this goal (what type of controls do you use to define this goal). How do you create motivation or incentives for employees in CSR activities? Do you negotiate these activities with your employees? If yes, please elaborate how you do them? How do you make sure that CSR strategy/activities are on track? How do you evaluate CSR activities? Do you ex post evaluate these activities? If yes, why and how? Which is the most crucial division concerning CSR activities in your company? At which level of strategy implementation processes are CSR activities placed? How do you control this process? How do you compare the outcomes with pre-set targets and goals regarding CSR? How do you measure the outputs of CSR activities?</p>



How Interactive Control Systems Communicate Strategies (In This Case CSR) Within Organizations	
<b>What</b> (Key Constructions)	‘Control systems that managers use to involve themselves regularly and personally in the decision activities of subordinates’. Examples: ‘Profit planning systems, balanced scorecards, project management systems, brand revenue systems, intelligence systems’. (Simons, 1999, p.228)
<b>Why</b> Interactive Controls Are Important	‘To focus organizational attention on strategic uncertainties (clear visions and unclear visions), To provoke the emergence of new initiatives and strategies’. (Simons, 1999, p.228)
<b>How</b> to Measure or Use of Interactive Controls	‘Ensure that data generated by the system becomes an important and recurring agenda in discussion with subordinates. Ensure that the system is the focus of regular attention by managers throughout the organization. Participate in face-to-face meetings by subordinates. Continually challenge and debate data, assumptions, and action plans (study reports and stimulate information across the entire organization)’. (Simons, 1999, p.228)
<b>When</b> These Controls Should be Applied	‘Strategic uncertainties (e.g. protected markets, competitive markets, rapid early growth, crisis, lack of vision, etc.) require search for disruptive changes and opportunities’. (Simons, 1999, p.228)
<b>Who</b> Are Engaged with These Types of Controls	Senior managers actively use the system and assign subjective, effort-based rewards. Staff groups act as facilitators. (Simons, 1999, p.228)
<b>Key Questions</b>	(In all the questions, CSR activities considered are based on how the company defines them)
	<p>How do you ensure that CSR activities become an important and recurring agenda in discussions with subordinates? If these activities are not important for you, please elaborate why?</p> <p>How do you, as a manager, ensure that CSR activities are in regular focus throughout the entire organization? If these activities are not in your strategic focus, please elaborate why?</p> <p>Do you have regular or sometimes face-to-face meetings with your subordinates concerning CSR activities? If yes, please elaborate your answer.</p> <p>Did you make changes in CSR activities/strategy because of policy regulation changes, threats from competitors or protecting your business from markets changes? If yes, please elaborate which of the above reason caused the change? If it is none of the above reasons, then what was the reason?</p> <p>Do CSR activities create competitive advantage for your business? If yes, how?</p> <p>How do you study the reports and stimulate information concerning CSR activities across your organization?</p> <p>Did it ever happen to your company that CSR activities disrupt some opportunities or create some opportunities for the business? If yes, how did you search and pursue them?</p>

IT/IS: Define in accordance with the company's use and definition (software, hardware, networks, data)	
Key questions	Refer to this lever of control
<p>How do you monitor and organize the strategic processes of CSR activities? Do you use any kind of IT/IS as a tool for supporting you in this process?</p> <p>How do you create your feedback for different divisions (i.e. if you use feedback systems)? Do you receive support from any type of IT/IS for this purpose? If yes, what type of IT/IS and how?</p> <p>How much do you think that IT/IS supports you concerning the measurement, allocation of resources, and monitoring of the process of CSR activities? Please elaborate your answer. Why do you think that IT/IS provide more support during that special phase?</p> <p>Do you use IT/IS for computing or calculating performance variances regarding CSR activities? If yes, please elaborate how effectively IT/IS supports you in this regard?</p>	Diagnostic control
<p>How does IT/IS support you in the decision-making process of CSR activities?</p> <p>How do you study reports and stimulate information concerning CSR activities across the entire organization?</p> <p>How do IT/IS support you or enable you to gather as much as data concerning CSR activities to be able to respond to questions and suggest action plans that respond to the changing situations?</p> <p>Does IT/IS assist you for analyzing data about CSR activities? How? Please elaborate.</p>	Interactive control
<p>How do IT/IS support you on visualizing CSR activities?</p> <p>How do IT/IS enable you to create better mission, vision, values, and purpose for CSR activities?</p> <p>How do IT/IS act in terms of creating flow of communication of CSR activities across the entire organization?</p> <p>Do IT/IS support you for creating better communication with your subordinates, customers, and stakeholders regarding CSR activities? If yes, how? Please elaborate your answer.</p> <p>Do you think that IT/IS have the capacity to create accurate and on-time data and information concerning CSR activities?</p> <p>How do IT/IS support you in terms of accessibility and integrity of data and information regarding CSR activities?</p> <p>In the context of CSR activities, what is more important for you: 1) flow and clarity of communication internally or 2) visibility and transparency for your external communication to your stakeholders, customers, and markets? Why? Please elaborate if IT/IS supports you in this regard and how?</p>	Belief control
<p>Do you use IT/IS for communicating your formal rules and limitations about CSR activities? Please elaborate how?</p> <p>Do you use IT/IS for your managerial reports on CSR? If yes, how efficient do you think is IT/IS in this regard?</p> <p>Do you get any support from IT/IS for the design and operation of internal and external controls of CSR activities?</p> <p>Do you think that IT/IS helps you to segregate duties concerning CSR activities? If yes, please elaborate how?</p>	Boundary control